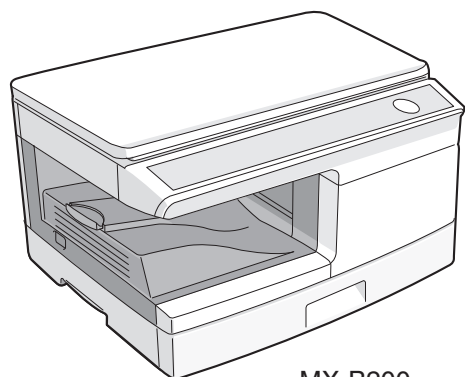


# SHARP SERVICE MANUAL

CODE: 00ZMXB200/S1E



MX-B200

## DIGITAL MULTIFUNCTIONAL SYSTEM

### MODEL **MX-B200**

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Parts marked with “△” are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

## CAUTION

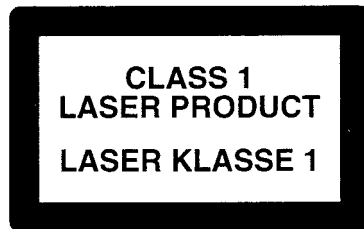
This product is a class 1 laser product that complies with 21CFR 1040 of the CDRH standard and IEC825. This means that this machine does not produce hazardous laser radiation. The use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This laser radiation is not a danger to the skin, but when an exact focusing of the laser beam is achieved on the eye's retina, there is the danger of spot damage to the retina.

The following cautions must be observed to avoid exposure of the laser beam to your eyes at the time of servicing.

- 1) When a problem in the laser optical unit has occurred, the whole optical unit must be exchanged as a unit, not as individual parts.
- 2) Do not look into the machine with the main switch turned on after removing the developer unit, toner cartridge, and drum cartridge.
- 3) Do not look into the laser beam exposure slit of the laser optical unit with the connector connected when removing and installing the optical system.
- 4) The middle frame contains the safety interlock switch.

Do not defeat the safety interlock by inserting wedges or other items into the switch slot.



LASER WAVE – LENGTH : 770 – 795nm  
Pulse times : 10.24μsec  
Out put power : 0.15mW ± 0.01mW

## CAUTION

INVISIBLE LASER RADIATION,  
WHEN OPEN AND INTERLOCKS DEFEATED.  
AVOID EXPOSURE TO BEAM.

## VORSICHT

UNSICHTBARE LASERSTRAHLUNG,  
WENN ABDECKUNG GEÖFFNET UND  
SICHERHEITVERRIEGELUNG ÜBERBRÜCKT.  
NICHT DEM STRAHL AUSSETZEN.

## VARO !

AVATTAESSA JA SUOJALUKITUS  
OHITETTAESSA OLET ALTTIINA  
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ  
KATSO SÄTEESEEN.

## ADVARSEL

USYNLIG LASERSTRÅLNING VED ÅBNING, NÅR  
SIKKERHEDSBRYDERE ER UDE AF  
FUNKTION. UNDGÅ UDSÆTTELSE FOR  
STRÅLNING.

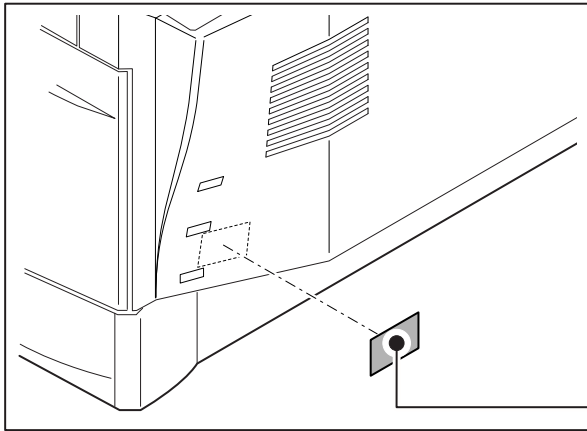
## VARNING !

OSYNLIG LASERSTRÅLNING NÅR DENNA DEL  
ÄR ÖPPNAD OCH SPÅRREN ÄR URKOPPLAD.  
BETRAKTA EJ STRÅLEN. – STRÅLEN ÄR  
FARLIG.

At the production line, the output power of the scanner unit is adjusted to 0.57 MILLI-WATT PLUS 20 PCTS and is maintained constant by the operation of the Automatic Power Control (APC). Even if the APC circuit fails in operation for some reason, the maximum output power will only be 15 MILLI-WATT 0.1 MICRO-SEC. Giving and accessible emission level of 42 MICRO-WATT which is still-less than the limit of CLASS-1 laser product.

#### Caution

This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.



The foregoing is applicable only to the 220V model, 230V model and 240V model.

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

VARNING - OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

**CLASS 1  
LASER PRODUCT  
LASER KLASSE 1**

LUOKAN 1 LASERLAITE  
KLASS 1 LASER APPARAT

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# [1] GENERAL

## 1. Major functions

### Configurations

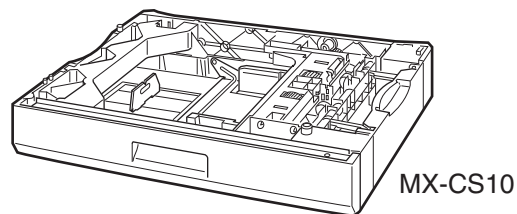
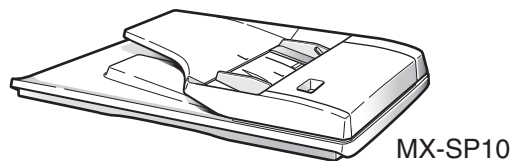
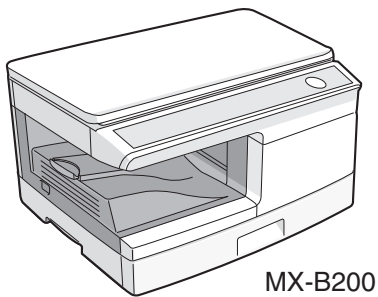
Item Model	CPM (A4)	PPM (A4)	SB/ MB	2 Tray	SPF	R- SPF	Color Scanner (push)	GDI printer	SPLC printer	E- SORT	Duplex	Shifter	FAX	Sharp desk	IEEE 1284	USB  (2.0 Hi- speed)	RJ 45	External NIC
MX- B200	20CPM	20PPM	MB	Opt	Opt	×	○	×	○	○	×	×	×	○	×	○	×	×

### Descriptions of items

CPM:	Copy speed (Copies Per Minute)
PPM:	Print speed (Print Per Minute)
SB/MB:	SB = Manual feed single bypass, MB = Manual feed multi-bypass
2 Tray:	Second cassette unit.
SPF:	Original feed unit
R-SPF:	Duplex original feed unit
Color Scanner:	Color scanner function
GDI printer:	GDI printer function with USB
SPLC printer:	SPLC printer function
E-SORT:	Electronic sort function
Duplex:	Auto duplex copy/print function
Shifter:	Job separator function
FAX:	FAX function.
Sharpdesk:	Scanner utilities
IEEE1284:	Interface port (parallel)
USB:	Interface port (USB)
RJ45:	Interface port (Network)
External NIC:	Network expansion kit

### Descriptions of table

- : Standard provision
- ×: No function or no option available
- Opt: Option



## [2] SPECIFICATIONS

### 1. Basic Specifications

Item			
Type		Desktop	
Copy system		Dry, electrostatic	
Segment (class)		Digital personal copier	
Copier dimensions	MX-B200	518mm (W) x 445mm (D) x 298mm (H) (20-1/2" (W) x 17-5/8" (D) x 11-3/4" (H))	
Weight (Approximately)	MX-B200	15.9kg (35.1 lbs.)	Toner cartridge not included

### 2. Operation specifications

Section, item			Details	
Paper feed section	Paper feed system			1 tray (250 sheet) + multi-bypass (50 sheet)
	AB system	Tray paper feed section	Paper size	A4, B5, A5 (Landscape)
			Paper weight	56 - 80g/m <sup>2</sup> (15 - 21 lbs.)
			Paper feed capacity	250 sheets
			Kinds	Standard paper, specified paper, recycled paper
			Remark	User adjustment of paper guide available
		Multi-bypass paper feed section	Paper size	Max, feedable size: A4 / Min, feedable size: 89 x 140mm
			Paper weight	56 - 128g/m <sup>2</sup> (15 - 34.5 lbs.)
			Paper feed capacity	50 sheets (80g/m <sup>2</sup> )
			Kinds	Standard paper, specified paper, recycled paper, OHP, Label, (Single copy)
			Remark	User adjustment of paper guide available
	Inch system	Tray paper feed section	Paper size	8-1/2" x 14", 8-1/2" x 13", 8-1/2" x 11", 8-1/2" x 5-1/2" (Landscape)
			Paper weight	15 - 21 lbs.
			Paper feed capacity	250 sheets
			Kinds	Standard paper, specified paper, recycled paper
			Remark	User adjustment of paper guide available
		Multi-bypass paper feed section	Paper size	Max, feedable size: 8-1/2" x 14" / Min, feedable size: 3.87" x 5.83"
			Paper weight	15 - 34.5 lbs.
			Paper feed capacity	50 sheets (80g/m <sup>2</sup> )
			Kinds	Standard paper, specified paper, recycled paper, OHP, Label, Envelop (Single copy)
			Remark	User adjustment of paper guide available
Paper exit section		Exit way	Face down	
		Capacity of output tray	200 sheets	
Originals		Original set	Center Registration (left edge)	
		Max. original size	A4 (8-1/2" x 14")	
		Original kinds	sheet, book	
		Original size detection	None	
Optical section	Scanning section	Scanning system		3 CCDs (RGB) sensor scanning by lighting white lamp
		CCD sensor	Resolution	600 dpi
		Lighting lamp	Type	CCFL
			Voltage	560Vrms
			Power consumption	2.8W
		Output data		Output: R, G, B 1 or 8 bits/pixel / Input: A/D 16 bits (12 bits actual)
	Writing section	Writing system		Writing to OPC drum by the semiconductor laser
		Laser unit	Resolution	600 dpi
Image forming		Photoconductor	Type	OPC (30ø)
			Life	25k
		Charger	Charging system	Saw-tooth charging with a grid, / (-) scorotron discharge
			Transfer system	(+) DC corotron system
			Separation system	(-) DC corotron system
		Developing	Developing system	Dry, 2-component magnetic brush development system
		Cleaning	Cleaning system	Counter blade system (Counter to rotation)

Section, item		Details	
Fusing section	Fusing system		Heat roller system
	Upper heat roller	Type	Teflon roller
	Lower heat roller	Type	Silicon rubber roller
	Heater lamp	Type	Halogen lamp
		Voltage	120V / 220 - 240V
		Power consumption	800W
Electrical section	Power source	Voltage	120V / 220 - 240V
		Frequency	Common use for 50 and 60Hz
	Power consumption	Max.	Less than 1000W
		Average (during copying)	350Wh/H or less
		Average (stand-by)	80Wh/H or less
		Pre-heat mode	25Wh/H or less

### 3. Copy performance

Section, item		Details	
Copy ratio	Document glass		Variable: 25% to 400% in 1% increments (total 376 steps) Fixed: 50%, 70%, 86%, 100%, 141%, 200% (50%, 64%, 78%, 100%, 129%, 200%)
	SPF		Variable: 50% to 200% in 1% increments (total 151 steps) Fixed: 50%, 70%, 86%, 100%, 141%, 200% (50%, 64%, 78%, 100%, 129%, 200%)
Manual steps (Text, Photo)			5 steps
Copy speed (CPM)	First-copy time *1 (Approximately)		8.0 seconds (When user program 24 is set to OFF) 10.7 seconds (paper: A4 (8-1/2" x 11"), exposure mode: AUTO, copy ratio: 100%)
	AB system A4 (Landscape)	Same size	20
	AB system B5 (Landscape)	Same size	20
	Inch system 8-1/2" x 11" (Landscape)	Same size	20
Max. continuous copy quantity			99
Void	Void area	Leading edge	1 - 4mm
		Trailing edge	4mm or less
		Side edge void area	0.5mm or more (per side) 4.5mm or less (total of both sides)
	Image loss	Leading edge	same size: 3.0mm or less (OC) / 4mm or less (SPF) Enlarge: 1.5mm or less (OC) / 3mm or less (SPF) Reduction (50%): 6.0mm or less (OC) / 8mm or less (SPF)
Warm-up time			- - -

\*1: The first-copy time is measured after the power save indicator turns off following power on, using the document glass with the polygon rotating in the copy ready state and "Selection of copy start state" set to ON in the user programs (A4 (8-1/2" x 11"), paper fed from paper tray).  
The first-copy time may vary depending on machine operating conditions and ambient conditions such as temperature.

## 4. SPLC printer

Print speed	Max. 20ppm (Paper size: A4, excluding manual paper feed) * Varies depending on the PC performance.
First print time	8 sec. (without data transfer time)
Duplex	No
ROP	Yes
Memory	32MB
Interface	USB 2.0 (Hi Speed)
Emulation	SPLC
MIB support	No
Resolution	600dpi *1
Supported OS	Windows 2000 Professional, Windows XP Home Edition/Professional, Windows Vista, Windows 7
WHQL support	Yes *2
Application	Status window

\*1: Engine Resolution

\*2: Running change

## 5. Scan function

Type	Flat Bed Color Scanner
Scanning system	Original table/SPF
Light source	3 CCDs (RGB) sensor scanning by lighting white lamp (1 pcs of CCFL)
Resolution	Optical: 600 x 600dpi Setting range: 50 - 9600dpi (Preview resolution is fixed at 75dpi)
Originals	Sheet type / Book type
Output data	R, G, B 1 or 8 bits/pixel
Scan range	OC / SPF : 8.5" (H) x 14.0" (V) Original position: Left Center
Scan speed	OC / SPF : Max. 2.88ms/line
Protocol	TWAIN / WIA (XP, Vista, 7) / STI
Interface	USB 2.0 (Hi speed support)
Scanner utility	Button Manager / Sharpdesk / Composer
Scan key/lamp	Yes
Duplex scan	No
Supported OS	Windows 2000 Professional, Windows XP Home Edition/Professional, Windows Vista, Windows 7
Void area	No (User settable by PC)
WHQL supported	Yes *1

\*1: By running change

## 6. SPF (Option)

Original capacity	50 sheets (56 - 90g/m <sup>2</sup> ) (15 - 23.9 lbs.) Stacking Height: less than 6.5mm or 1/4"
Original size	A4 to A5 / 8-1/2" x 14" to 5-1/2" x 8-1/2" (Landscape)
Original replacement speed	A4 about 13 sheets (65%) 8-1/2" x 11" about 14 sheets (70%)
Original placement	Face up
Original weight	56 - 90g/m <sup>2</sup> (15 - 23.9lbs.)
Mixed feeding (Paper size)	No
Original which cannot	Thermal papers, originals with punch holes for files, be used folded paper, transparent originals such as OHP films, stapled or clip used originals with cover up liquid used, Originals with tape sealed, originals with high level frictional coefficient such as photos or catalogs.

## [3] CONSUMABLE PARTS

### 1. Supply system table

#### A. Asia

No.	Name	Content	Life	Product name	Package
1	Toner cartridge (Black)	Toner cartridge x 1 (Black toner: Net 243 g) IC-Chip: Yes    Stirring function: Yes	8K (A4 6% Document)	MX-B20AT1	10
2	Developer (Black)	Developer x 1 (Black developer: Net 170 g)	25K	MX-B20AV1	10
3	Drum	OPC drum x 1 Drum fixing plate x 1	25K	AR-152DR	10

#### B. SMEF/Dealer

No.	Name	Content	Life	Product name	Package
1	Toner cartridge (Black)	Toner cartridge x 1 (Black toner: Net 243 g) IC-Chip: Yes    Stirring function: Yes	8K (A4 6% Document)	MX-B20FT1	10
2	Developer (Black)	Developer x 1 (Black developer: Net 170 g)	25K	MX-B20AV1	10
3	Drum	OPC drum x 1 Drum fixing plate x 1	25K	AR-152DR	10

#### C. SRH

No.	Name	Content	Life	Product name	Package
1	Toner cartridge (Black)	Toner cartridge x 1 (Black toner: Net 243 g) IC-Chip: Yes    Stirring function: Yes	8K (A4 6% Document)	MX-B20AT1	10
2	Developer (Black)	Developer x 1 (Black developer: Net 170 g)	25K	MX-20AV1	10
3	Drum	OPC drum x 1 Drum fixing plate x 1	25K	AR-152DR-C	10

#### D. Europe

No.	Name	Content	Life	Product name	Package
1	Toner cartridge (Black)	Toner cartridge x 1 (Black toner: Net 243 g) IC-Chip: Yes    Stirring function: Yes	8K (A4 6% Document)	MX-20GT1	10
2	Developer (Black)	Developer x 1 (Black developer: Net 170 g)	25K	MX-20GV1	10
3	Drum	OPC drum x 1 Drum fixing plate x 1	25K	AR-152DM	10

## 2. Environmental

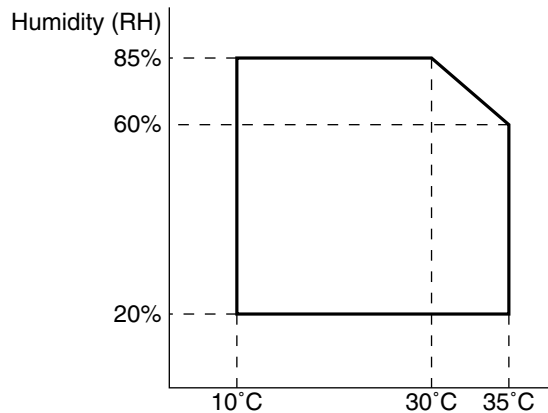
The environmental conditions for assuring the copy quality and the machine operations are as follows:

### (1) Normal operating condition

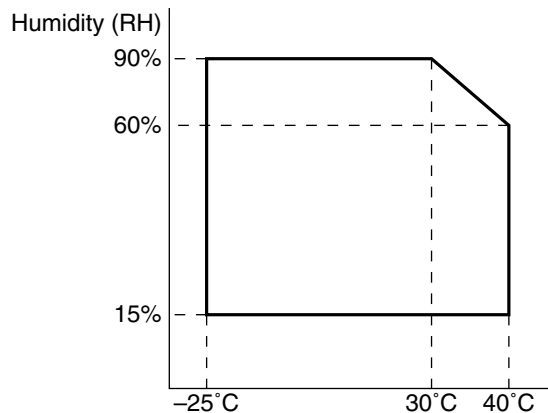
Temperature: 20°C to 25°C

Humidity: 65 ± 5%RH

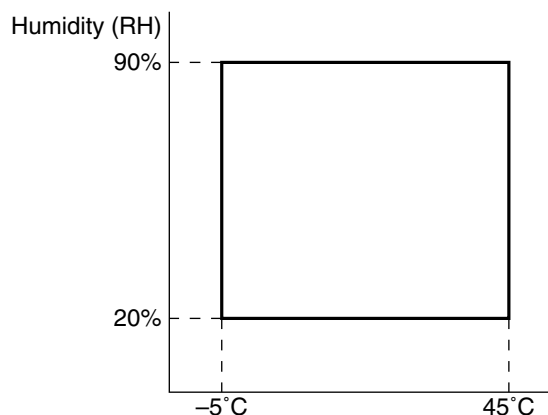
### (2) Acceptable operating condition



### (3) Transportation condition

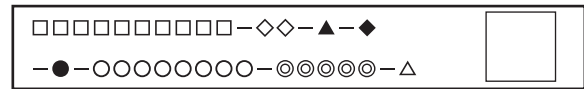


### (4) Supply storage condition



## 3. Production control number (lot No.) identification

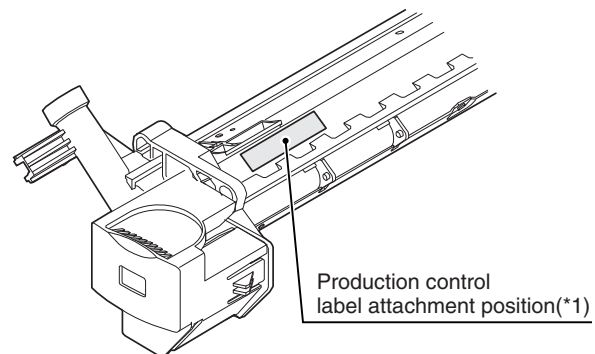
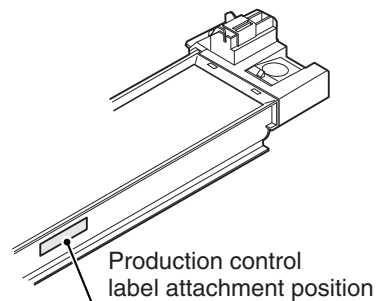
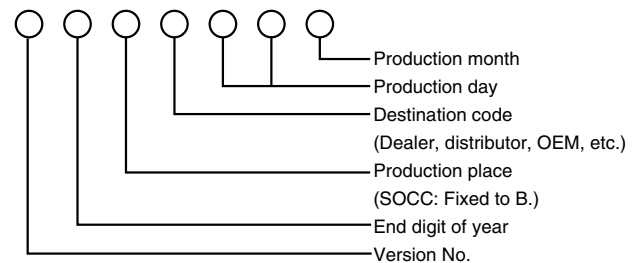
### <Toner cartridge>



- : Model name
- ◇ : Color code
- ▲ : Destination
- ◆ : Skating
- : Production place
- : Production date (YYYYMMDD)
- ◎ : Serial number
- △ : Version number

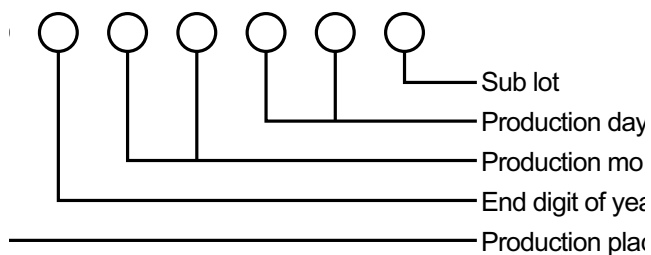
### <Drum cartridge>

The label on the drum cartridge shows the date of production. (SOCC production)



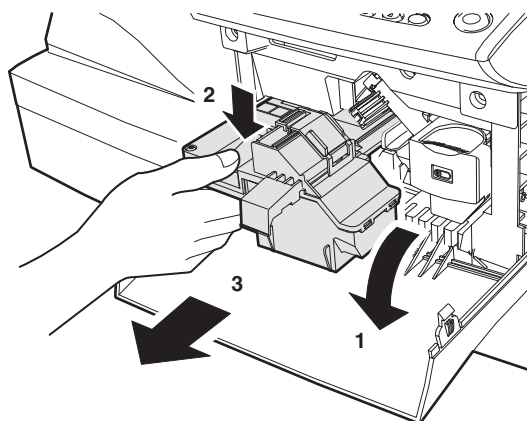
\*1 The production control label is not attached to the cartridge of a China product.

#### <Developer>

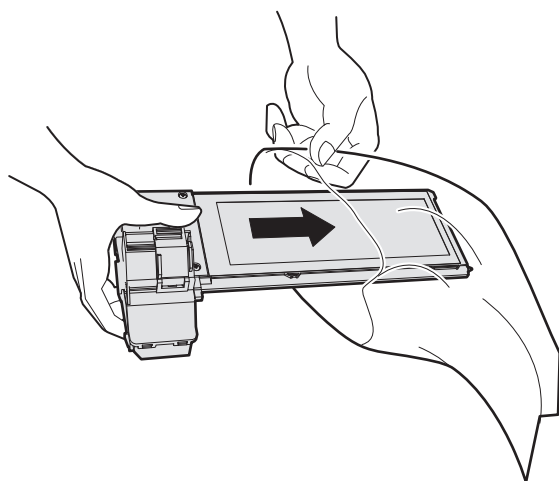


## 4. Toner cartridge replacement

- 1) Open the front and side cabinets of the copier.
- 2) Keep holding Toner lever, and push down.
- 3) Carefully pull out Toner unit from the copier.



- 4) Put Toner unit in a collection bag immediately after removing it from the copier

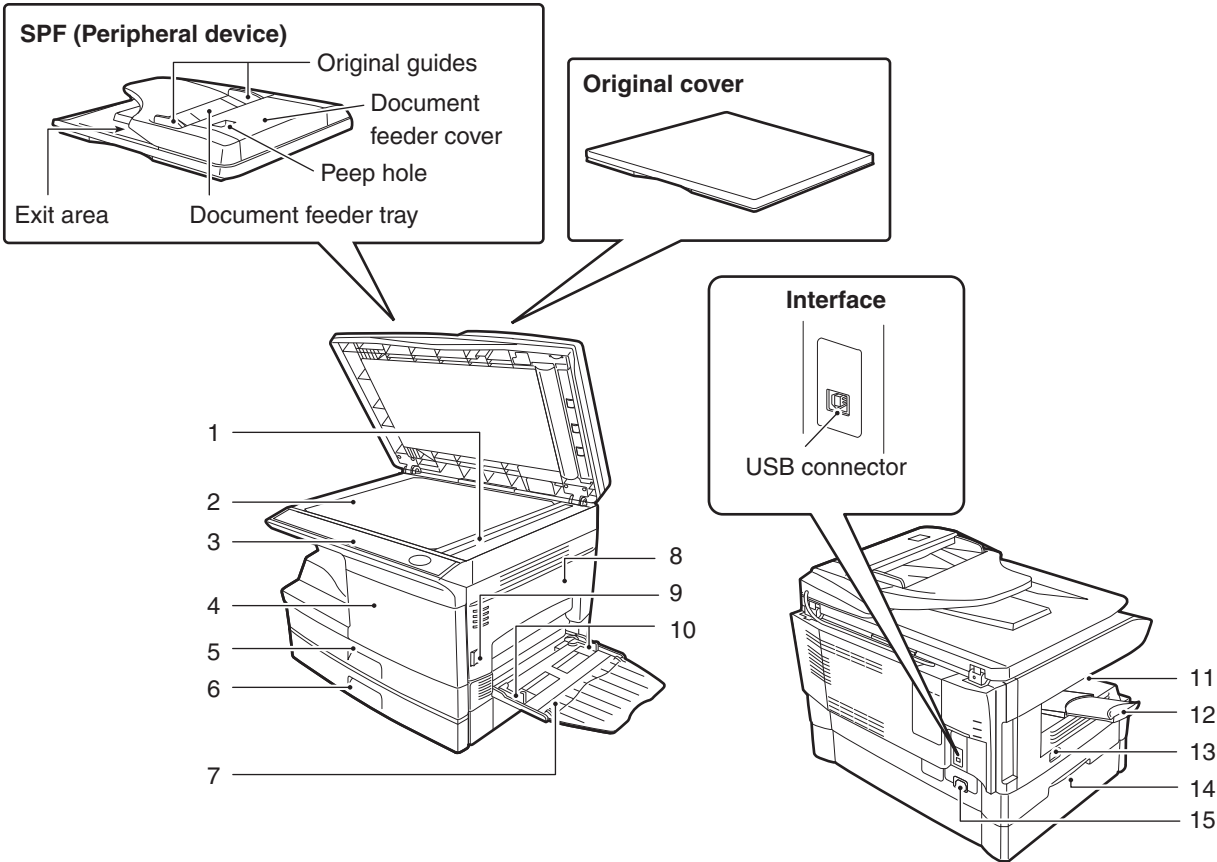


Note: Never carry exposed Toner unit. Be sure to put it in the collection bag.



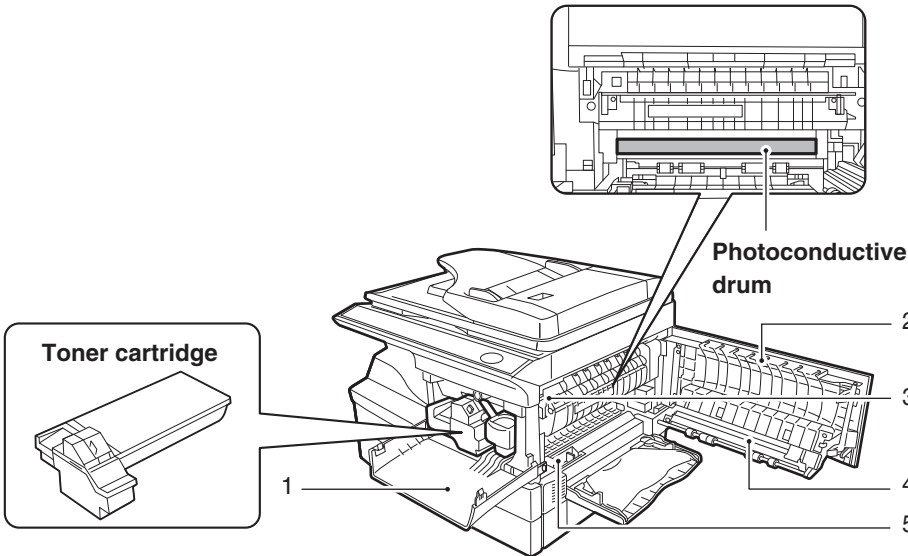
# [4] EXTERNAL VIEWS AND INTERNAL STRUCTURES

## 1. Appearance



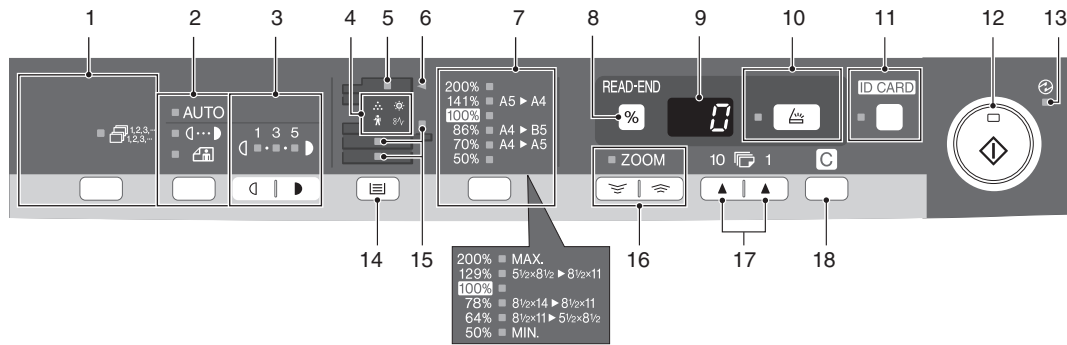
1	SPF scanning area (Option)	2	Document glass	3	Operation panel
4	Front cover	5	Paper tray 1	6	Paper tray 2 (Option)
7	Multi-bypass tray	8	Side cover	9	Side cover open button
10	Bypass tray paper guides	11	Paper output tray	12	Paper output tray extension
13	Power switch	14	Handle	15	Power cord socket

## 2. Internal



1	Front cover	2	Side cover	3	Fusing unit release lever
4	Transfer charger	5	Charger cleaner		

### 3. Operation panel



1	<b>Sort key and indicators</b> Use to select sort mode.	10	<b>SCAN key and indicator</b>
2	<b>Exposure mode selector key and indicators</b> Use to sequentially select the exposure modes: AUTO, MANUAL or PHOTO. Selected mode is shown by a lit indicator.	11	<b>ID CARD key and indicator</b> Use to copy ID card. For description, see "ID CARD COPY".
3	<b>Light and dark keys and indicators</b> Use to adjust the MANUAL or PHOTO exposure level. Selected exposure level is shown by a lit indicator. Use to start and terminate user program setting.	12	<b>Start key and indicator</b> <ul style="list-style-type: none"> <li>Copying is possible when the indicator is on.</li> <li>Press to start copying.</li> <li>Use to set a user program.</li> </ul>
4	<b>Alarm indicators</b> <ul style="list-style-type: none"> <li> Developer replacement required indicator</li> <li> Misfeed indicator</li> <li> Toner cartridge replacement required indicator</li> <li> Maintenance indicator</li> </ul>	13	<b>Power save indicator</b> Lights up when the unit is in a power save mode.
5	<b>SPF indicator</b> *1	14	<b>Tray select key</b> Use to select a paper feed station (paper tray 1, paper tray 2 *2 or multibypass tray).
6	<b>SPF misfeed indicator</b> *1	15	<b>Paper feed location indicators</b> Light up to show the selected paper feed station.
7	<b>Copy ratio selector key</b> *3 <b>and indicators</b> Use to sequentially select preset reduction/enlargement copy ratios. Selected copy ratio is shown by a lit indicator.	16	<b>ZOOM keys and indicator</b> Use to select any reduction or enlargement copy ratio from 25% to 400% in 1% increments. (When the SPF is being used, the zoom copy ratio range is 50% to 200%.)
8	<b>Copy ratio display (%) key/READ-END key</b> <ul style="list-style-type: none"> <li>Use to verify a zoom setting without changing the zoom ratio.</li> <li>Use to check the number of originals that must be returned to the document feeder tray if a misfeed occurs in the machine when the SPF is used.</li> <li>Use to terminate reading originals in sort mode.</li> </ul>	17	<b>Copy quantity keys</b> <ul style="list-style-type: none"> <li>Use to select the desired copy quantity (1 to 99).</li> <li>Use to make user program entries.</li> </ul>
9	<b>Display</b> Displays the specified copy quantity, zoom copy ratio, user program code and error code.	18	<b>Clear key</b> <ul style="list-style-type: none"> <li>Press to clear the display, or press during a copy run to terminate copying.</li> <li>Press and hold down during standby to display the total number of copies made to date.</li> </ul>

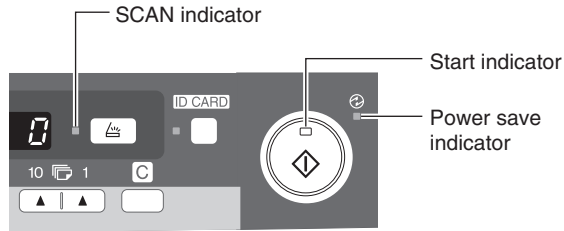
\*1: Only operates when an SPF is installed.

\*2: Peripheral device.

\*3: The indicators of the operation panel may differ depending on the country and region.

## 4. Indicators on the operation panel

The start (⏻) indicator indicates the state of the printer or scanner.



### Start indicator

- On:** Indicates the unit is ready for copying or scanning is being performed.
- Blinking:** The indicator blinks in the following situations:
- When a print job is interrupted.
  - When reserving a copy job.
  - When toner is being replenished during a copy or print job.
- Off:** The indicator is off in the following situations:
- During copying or scanning.
  - The unit is in the auto power shut-off mode.
  - When a misfeed or error has occurred.
  - During print online.

### Power save indicator

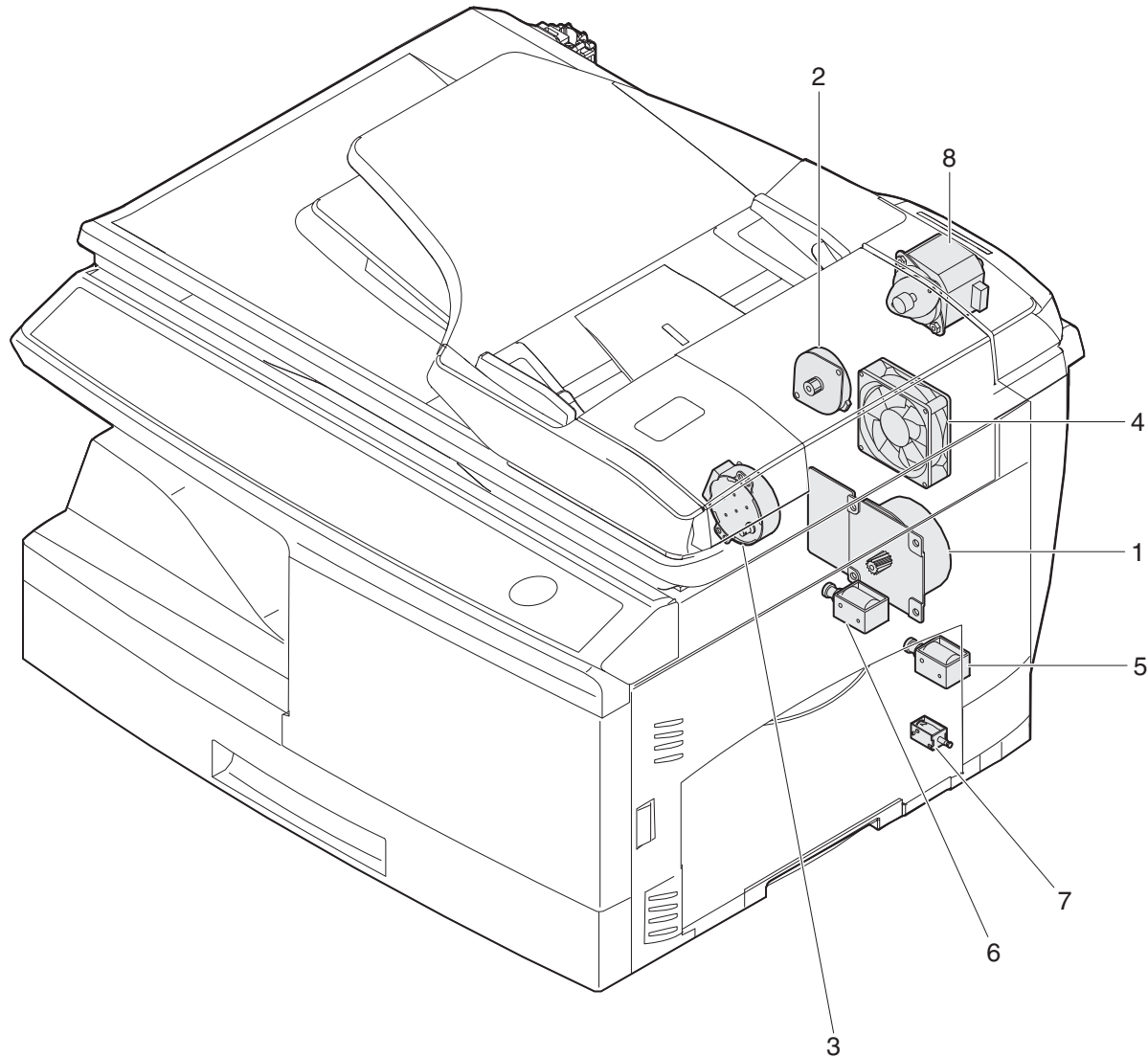
- On:** Indicates the unit is in a power save mode.
- Blinking:** Indicates that the unit is initializing (when the side cover is opened and closed or the power turned off and on).

### SCAN indicator

- On:** The SCAN (⏻) key has been pressed and the unit is in scanner mode.
- Blinking:** A scan job is being executed from the computer, or scan data is stored in the unit's memory.
- Off:** The unit is in the copy mode.

## 5. Motors and solenoids

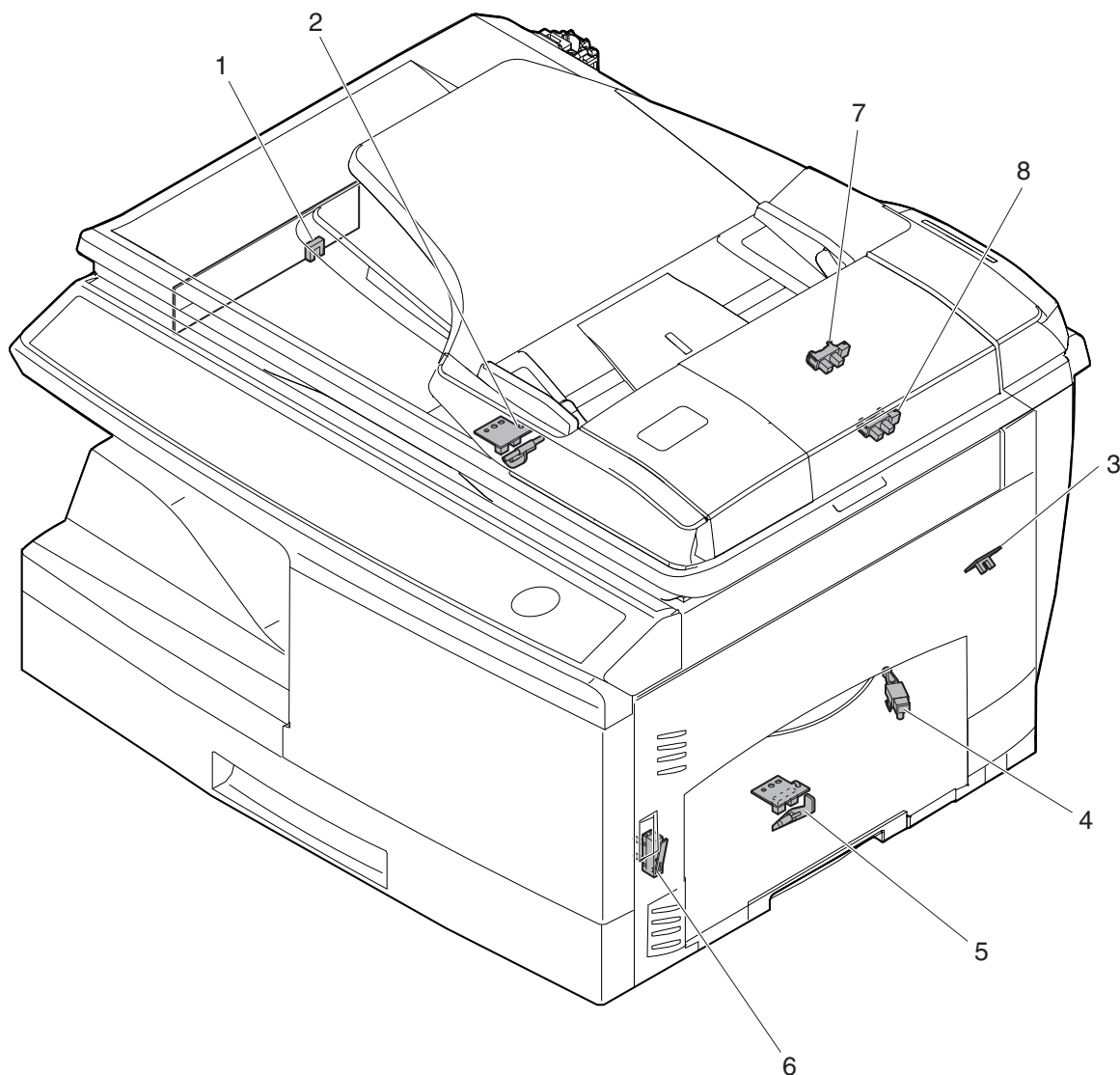
\* SPF is option.



No.	Name	Control signal	Function / Operation
1	Main motor	MM	Drives the copier.
2	Scanner motor	MRMT	Drives the optical mirror base (scanner unit).
3	Toner motor	TM	Supplies toner.
4	Cooling fan motor	VFM	Cools the optical, fusing section.
5	Resist roller solenoid	RRS	Resist roller rotation control solenoid
6	Paper feed solenoid	CPFS1	Cassette Paper feed solenoid 1
7	Multi paper feed solenoid	MPFS	Multi manual pages feed solenoid
8	SPF motor	SPFM	Drives the single pass feeder (Option)

## 6. Sensors and switches

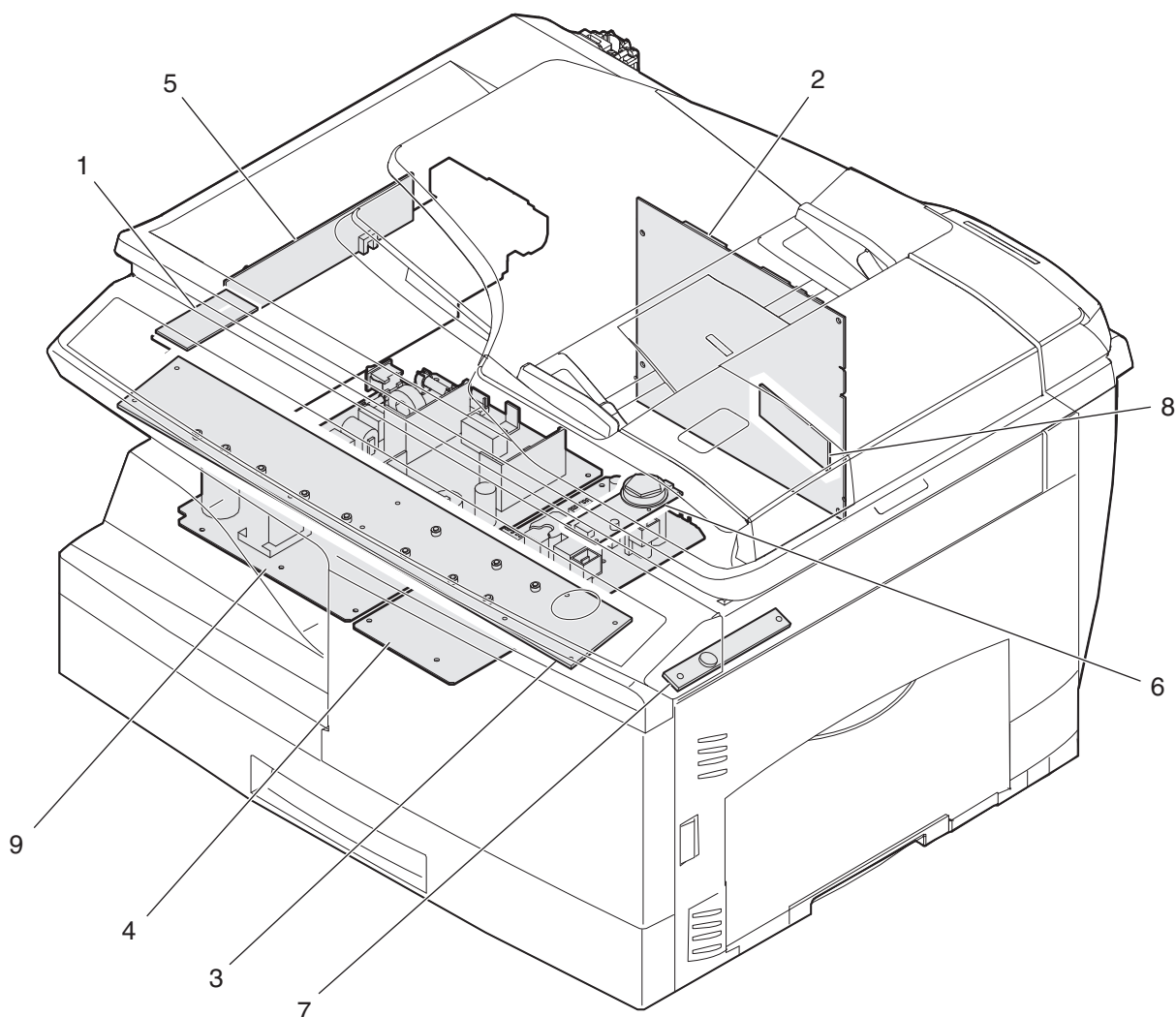
\* SPF is option.



No.	Name	Signal	Type	Function / Operation	Output
1	Scanner unit home position sensor	MHPS	Transmission sensor	Scanner unit home position detection	"H" at home position
2	POD sensor	POD	Transmission sensor	Paper exit detection	"H" at paper pass
3	PPD2 sensor	PPD2	Transmission sensor	Paper transport detection 2	"L" at paper pass
4	Cassette detection switch	CED1	Micro-switch	Cassette installation detection	"H" at cassette insertion
5	PPD1 sensor	PPD1	Transmission sensor	Paper transport detection 1	"L" at paper pass
6	Door switch	DSW	Micro-switch	Door open/close detection (safety switch for 24V)	0V at door open
7	SPF sensor	SPID/ SD SW	Transmission sensor	Paper entry detection Cover open/close detection	"L" at paper pass (Option)
8	SPPD sensor	SPPD	Transmission sensor	Paper transport detection	"L" at paper pass (Option)

## 7. PWB unit

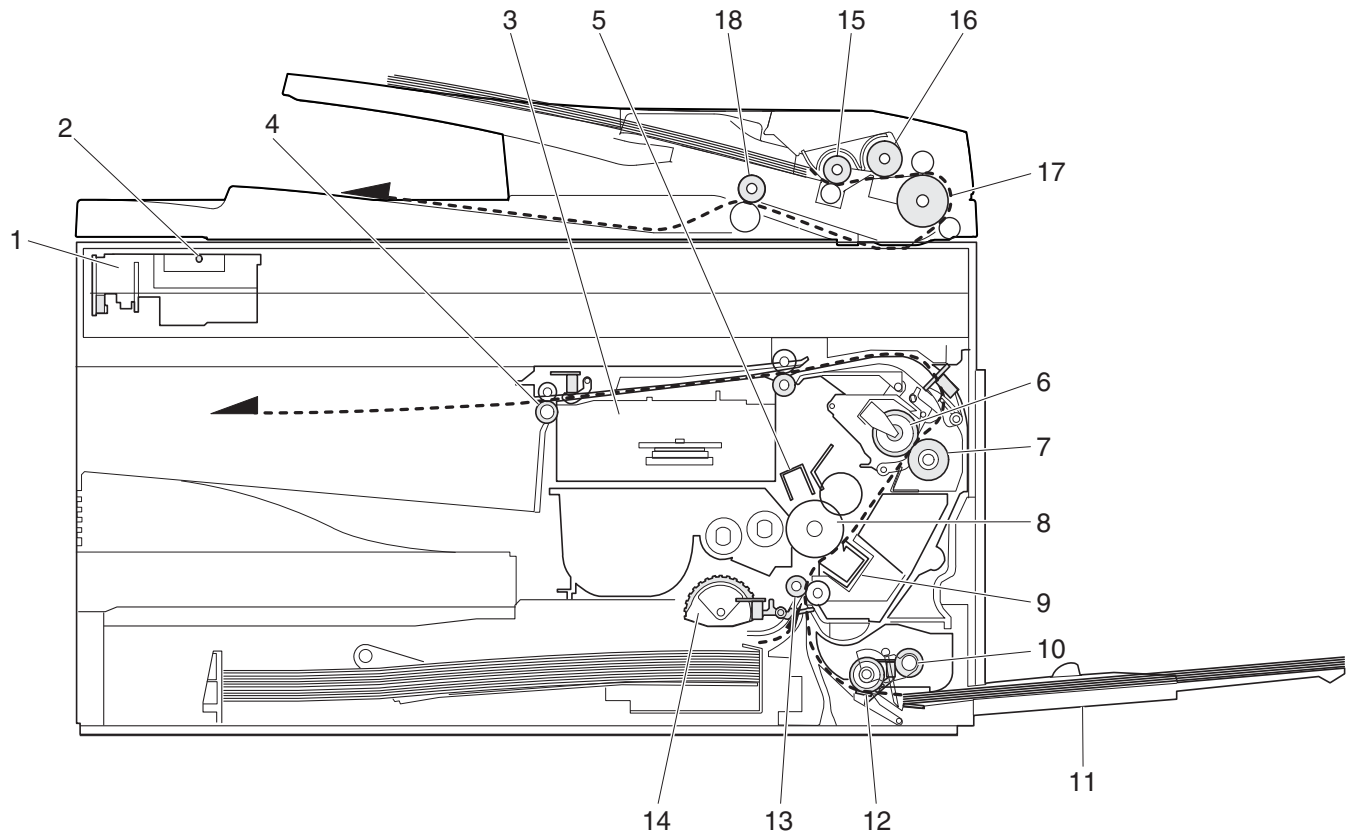
\* SPF is option.



No.	Name	Function / Operation
1	Exposure lamp inverter PWB	Exposure lamp (CCFL) control
2	Main PWB (MCU)	Copier control
3	Operation PWB	Operation input/display
4	High voltage PWB	High voltage control
5	CCD sensor PWB	For image scanning
6	LSU motor PWB	For polygon motor drive
7	TCS PWB	For toner sensor control
8	LSU PWB	For laser control
9	Power PWB	AC power input, DC voltage control

## 8. Cross sectional view

\* SPF is option.



No.	Name	Function / Operation
1	Scanner unit	Illuminates the original with the copy lamp and passes the reflected light to the lens unit (CCD).
2	Exposure lamp	Exposure lamp (CCFL) illuminates original
3	LSU (Laser unit)	Converts the original image signal into laser beams and writes onto the drum.
4	Paper exit roller	Roller for paper exit
5	Main charger	Provides negative charges evenly to the drum surface.
6	Heat roller	Fuses toner on the paper. (Teflon roller)
7	Pressure roller	Fuses toner on the paper. (Silicon rubber roller)
8	Drum	Forms images.
9	Transfer unit	Transfers images onto the drum.
10	Pickup roller	Picks up the manual feed paper. (In multi feed only)
11	Manual paper feed tray	Tray for manual feed paper
12	Manual paper feed roller	Transport the paper from the manual paper feed port.
13	PS roller unit	Takes synchronization between the lead edge and the rear edge of the paper.
14	Paper feed roller	Picks up a sheet of paper from the cassette.
15	Pickup roller	Picks up documents. (Option)
16	Separation roller	Separates documents to feed properly. (Option)
17	PS roller	Feeds documents to the scanning section. (Option)
18	Paper exit roller	Discharges documents. (Option)

## [5] UNPACKING AND INSTALLATION

### 1. Copier installation

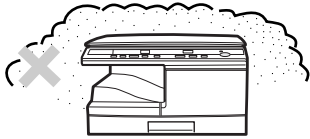
Improper installation may damage the copier. Please note the following during initial installation and whenever the copier is moved.

**Caution:** If the copier is moved from a cool place to a warm place, condensation may form inside the copier. Operation in this condition will cause poor copy quality and malfunctions.

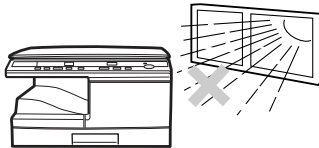
Leave the copier at room temperature for at least 2 hours before use.

Do not install your copier in areas that are:

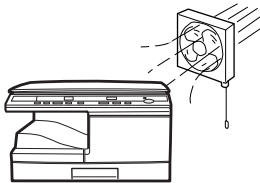
- damp, humid, or very dusty



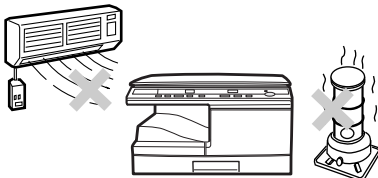
- exposed to direct sunlight



- poorly ventilated



- subject to extreme temperature or humidity changes, e.g., near an air conditioner or heater.

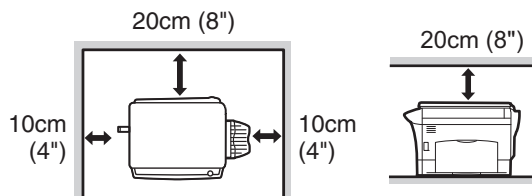


The copier should be installed near an accessible power outlet for easy connection.

Be sure to connect the power cord only to a power outlet that meets the specified voltage and current requirements.

Also make certain the outlet is properly grounded.

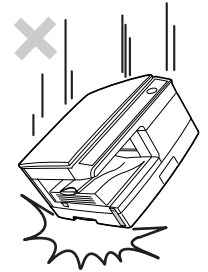
Be sure to allow the required space around the machine for servicing and proper ventilation.



### 2. Cautions on handling

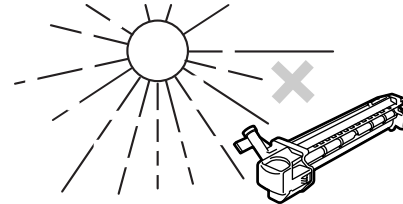
Be careful in handling the copier as follows to maintain the performance of this copier.

Do not drop the copier, subject it to shock or strike it against any object.



Do not expose the drum cartridge to direct sunlight.

Doing so will damage the surface (green portion) of the drum cartridge, causing poor print quality.



Store spare supplies such as drum cartridges and TD cartridges in a dark place without removing from the package before use.

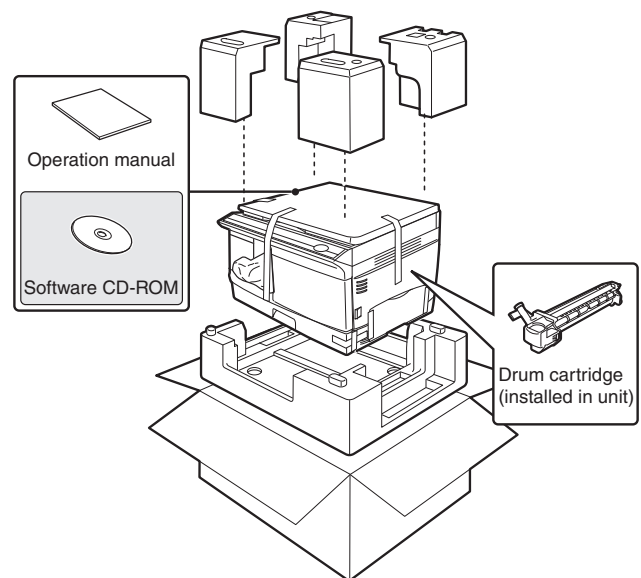
If they are exposed to direct sunlight, poor print quality may result.

Do not touch the surface (green portion) of the drum cartridge.

Doing so will damage the surface of the cartridge, causing poor print quality.

### 3. Checking packed components and accessories

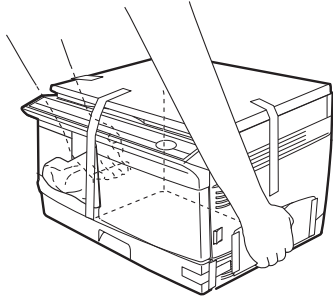
Open the carton and check if the following components and accessories are included.





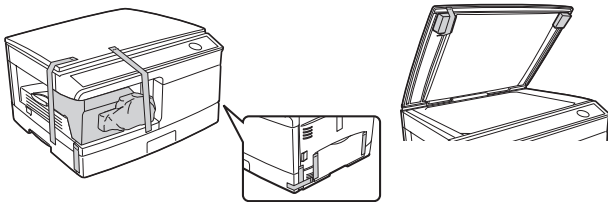
## 4. Unpacking

Be sure to hold the handles on both sides of the unit to unpack the unit and carry it to the installation location.



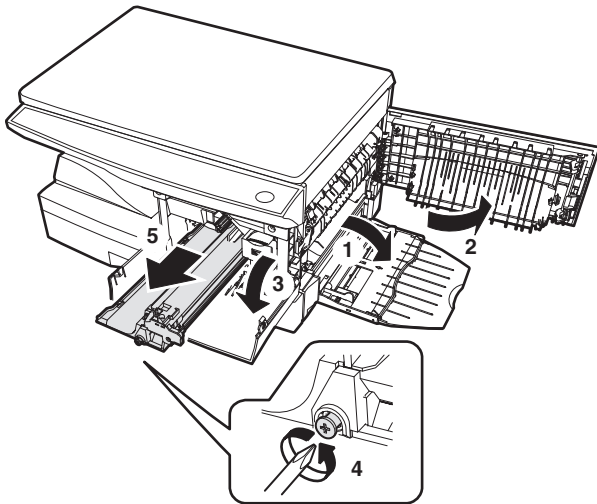
## 5. Removing protective packing materials

- 1) Remove all pieces of tape shown in the illustration below. Then open the SPF and remove protective materials. After that, take out the bag containing the TD cartridge.

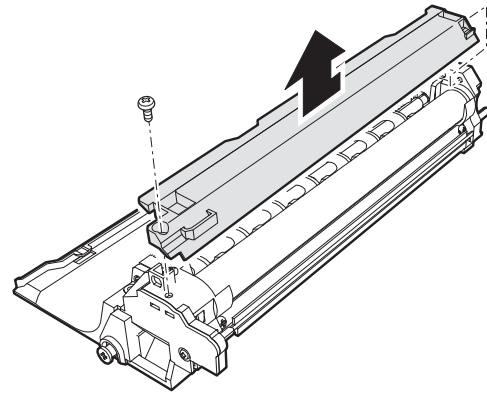


## 6. Developer unit installation

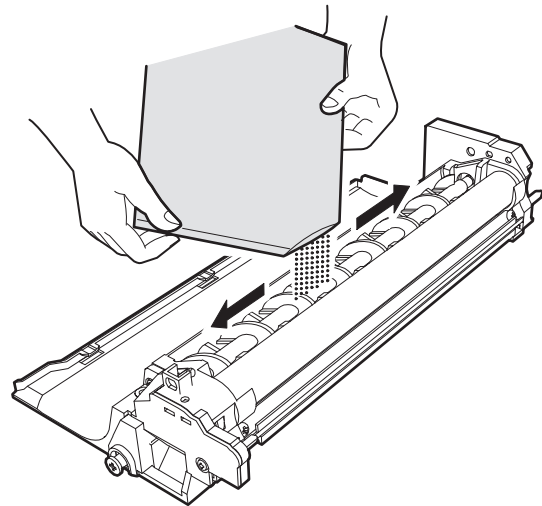
- 1) 2) 3) Open the side and front cabinets of the copier.
- 4) Remove the locking tape of the developer unit.
- 5) Remove the screw which is fixing the copier and Developer unit.
- 6) Remove Developer unit slowly from the copier.



- 7) Remove the screw (1 pc).
- 8) Remove Upper developer unit.

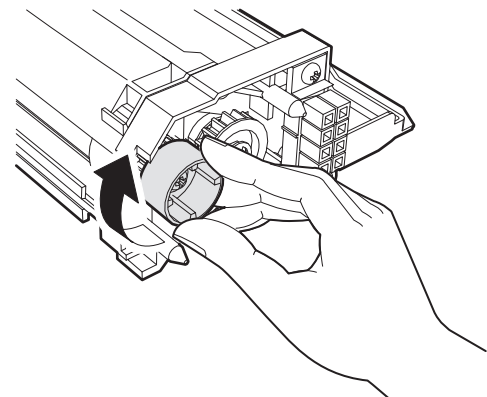


- 9) Shake the aluminum bag to stir developer
- 10) Supply developer from the aluminum bag to the top of the MX roller evenly.



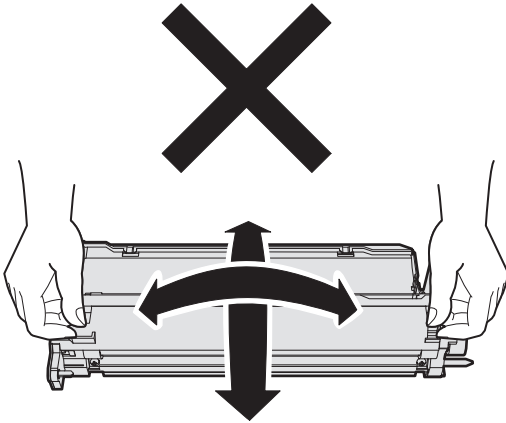
Note: Be careful not to splash developer outside Developer unit.

- 11) Attach Upper developer unit and fix it with a screw.
- 12) Rotate the MG roller gear to distribute developer evenly.



Note: Never rotate the gear in the reverse direction.

Note: When carrying Developer unit, do not tilt it extremely as shown with the arrow in the figure below.  
(Prevention of splash of developer)



- 13) Insert Developer unit carefully into the copier.

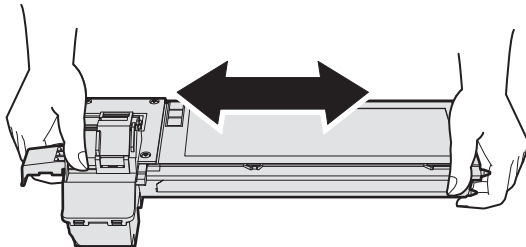
Note: Quick insertion may result in splash of developer. Be sure to insert carefully.

- 14) Confirm that Developer unit is completely inserted to the bottom of the machine, fix Developer unit and the machine with a screw.

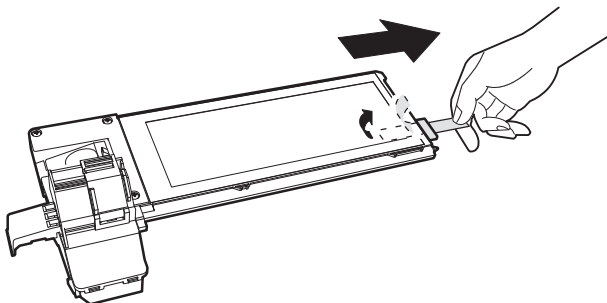
- 15) Completion of Developer unit installation

## 7. Toner cartridge installation

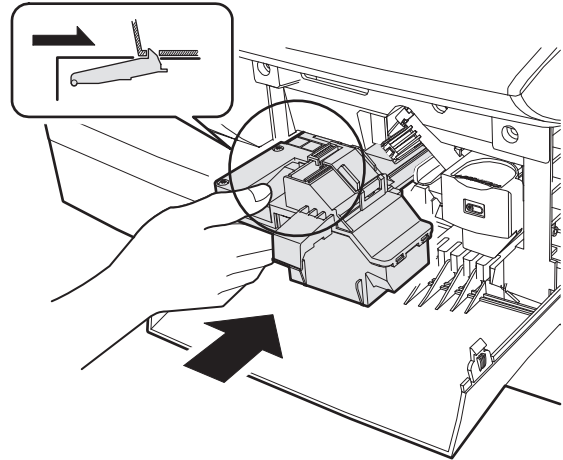
- 1) To prevent against uneven distribution of toner, hold Toner unit with both hands and shake it several times horizontally.



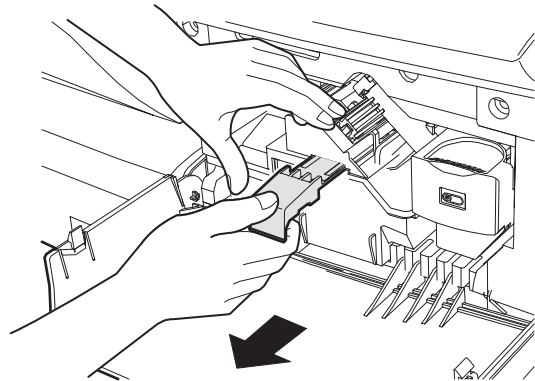
- 2) Hold the section of Toner unit shown in the figure below, remove the packing tape, and remove the cushion.
- 3) Pull out the cushion in the arrow direction.



- 4) Insert Toner unit carefully into the copier.
- 5) Insert until the hook is engaged with the copier as shown in the figure below.



- 6) Pull out the shutter in the arrow direction.

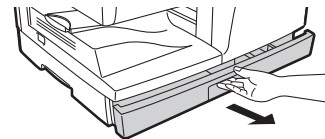


Note: Do not hold and carry the shutter. Otherwise the shutter may drop and Toner unit may drop.

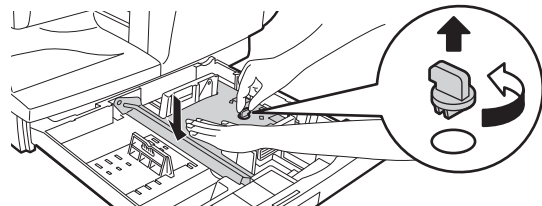
- 7) Completion of Toner unit installation  
Close the front and side cabinets.

## 8. Loading paper

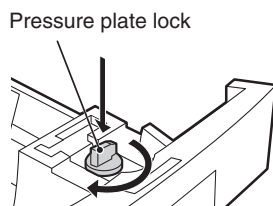
- 1) Raise the handle of the paper tray and pull the paper tray out until it stops.



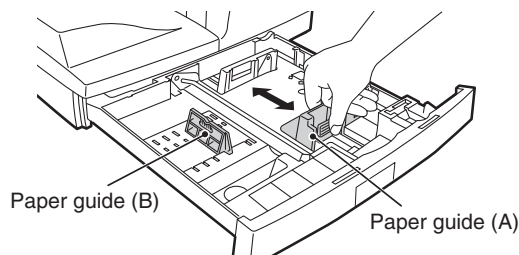
- 2) Remove the pressure plate lock. Rotate the pressure plate lock in the direction of the arrow to remove it while pressing down the pressure plate of the paper tray.



- 3) Store the pressure plate lock which has been removed in step 2). To store the pressure plate lock, rotate the lock to fix it on the relevant location.

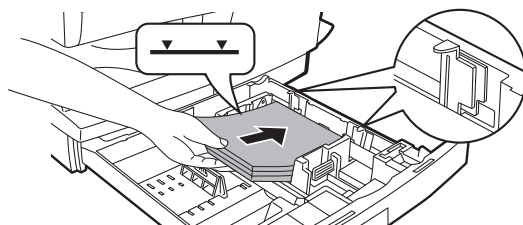


- 4) Adjust the paper guides on the paper tray to the copy paper width and length. Squeeze the lever of paper guide (A) and slide the guide to match with the width of the paper. Move paper guide (B) to the appropriate slot as marked on the tray.



- 5) Fan the paper and insert it into the tray. Make sure the edges go under the corner hooks.

Note: Do not load paper above the maximum height line (▼▼). Exceeding the line will cause a paper misfeed.



- 6) Gently push the paper tray back into the unit.

## 9. Power to copier

Ensure that the power switch of the unit is in the OFF position. Plug the other end of the power cord into the nearest outlet. Turn the power switch on the left side of the unit to the "ON" position. The start (⏻) indicator will light up and other indicators which show the initial settings of the operation panel will also light up to indicate the ready condition.

## 10. Software

The software CD-ROM that accompanies the machine contains the following software:

### MFP driver

#### Printer driver

The printer driver enables you to use the printer function of the machine.

The printer driver includes the Print Status Window. This is a utility that monitors the machine and informs you of the printing status, the name of the document currently being printed, and error messages.

#### Scanner driver

The scanner driver allows you to use the scanning function of the machine with TWAIN-compliant and WIA-compliant applications.

### Sharpdesk

Sharpdesk is an integrated software environment that makes it easy to manage documents and image files, and launch applications.

\* Sharpdesk cannot be used in Windows 2000.

### Button Manager

Button Manager allows you to use the scanner menus on the machine to scan a document.

\* The scanning feature can only be used with computers that are connected to the machine by a USB cable. If you are connected to the machine by a LAN connection, only the printer function can be used.

## A. Hardware and software requirements

Check the following hardware and software requirements in order to install the software.

Computer type	IBM PC/AT or compatible computer equipped with a USB 2.0*1/1.1*2
Operating system*3	Windows 2000 Professional*4, Windows XP, Windows Vista, Windows 7
Other hardware requirements	An environment on which any of the operating systems listed above can fully operate



\*1: The machine's USB 2.0 port will transfer data at the speed specified by the USB 2.0 (Hi-Speed) standard only if the Microsoft USB 2.0 driver is preinstalled in the computer, or if the USB 2.0 driver for Windows 2000 Professional/XP/Vista that Microsoft provides through "Windows Update" is installed.

\*2: Compatible with models preinstalled with Windows 2000 Professional, Windows XP Professional, Windows XP Home Edition, Windows Vista, or Windows 7, and which are equipped standard with a USB interface.

\*3: • The machine does not support printing from a Macintosh environment.  
• Administrator's rights are required to install the software using the installer.

\*4: Sharpdesk cannot be installed.

## B. Installing the software

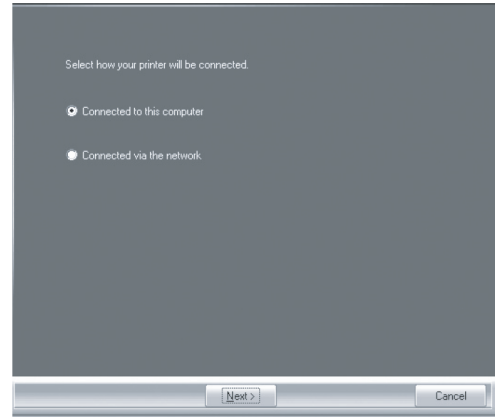
- 1) The USB cable must not be connected to the machine.  
Make sure that the cable is not connected before proceeding.  
If the cable is connected, a Plug and Play window will appear.  
If this happens, click the "Cancel" button to close the window and disconnect the cable.  
  
Note: The cable will be connected in step 13).
- 2) Insert the Software CD-ROM into your computer's CD-ROM drive.
- 3) Click the "Start" button, click "Computer", and then double-click the CD-ROM icon (  ).
  - In Windows XP, click the "start" button, click "My Computer", and then double-click the CD-ROM icon.
  - In Windows 2000, double-click "My Computer", and then double-click the CD-ROM icon.
- 4) Double-click the "Setup" icon (  ).
  - In Windows 7, if a message screen appears asking you for confirmation, click "Yes".
  - In Windows Vista, if a message screen appears asking you for confirmation, click "Allow".
- 5) The "SOFTWARE LICENSE" window will appear. Make sure that you understand the contents of the software license, and then click the "Yes" button.  
  
Note: You can show the "SOFTWARE LICENSE" in a different language by selecting the desired language from the language menu. To install the software in the selected language, continue the installation with that language selected.
- 6) Read the "Readme First" in the "Welcome" window and then click the "Next" button.
- 7) To install all of the software, click the "Standard" button and go to step 12).  
To install particular packages, click the "Custom" button and go to next step.
- 8) Click the "MFP Driver" button.  
Click the "Display Readme" button to show information on packages that are selected.



- 9) Select "Connected to this computer" and click the "Next" button. Follow the on-screen instructions.

Caution:

- If you are using Windows Vista/7 and a security warning window appears, be sure to click "Install this driver software anyway".
- If you are running Windows 2000/XP and a warning message appears regarding the Windows logo test or digital signature, be sure to click "Continue Anyway" or "Yes".



- 10) You will return to the window of step 8). If you wish to install Button Manager or Sharpdesk, click the "Utility Software" button.

If you do not wish to install the Utility Software, click the "Close" button and go to step 12).

Note: After the installation, a message prompting you to restart your computer may appear. In this case, click the "Yes" button to restart your computer.

### Installing the Utility Software

- 11) Click the "Button Manager" or the "Sharpdesk" button.  
Click the "Display Readme" button to show information on packages that are selected.  
Follow the on-screen instructions.
- \* In Windows 2000, The "Sharpdesk" button does not appear.



12) When installing is finished, click the "Close" button.

Caution:

- If you are using Windows Vista/7 and a security warning window appears, be sure to click "Install this driver software anyway".
- If you are running Windows 2000/XP and a warning message appears regarding the Windows logo test or digital signature, be sure to click "Continue Anyway" or "Yes".

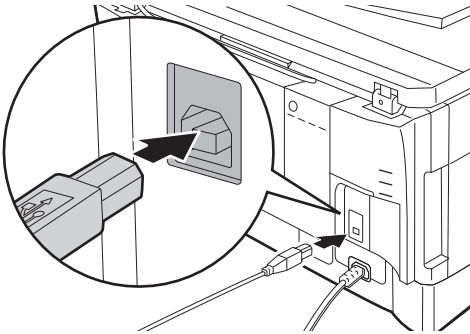
A message will appear instructing you to connect the machine to your computer. Click the "OK" button.

Note: After the installation, a message prompting you to restart your computer may appear. In this case, click the "Yes" button to restart your computer.

13) Connect the machine to your computer with a USB cable.

- <1> Make sure that the machine is powered on.
- <2> Connect the cable to the USB connector (B type) on the machine.  
The USB interface on the machine complies with the USB 2.0 (Hi-Speed) standard. Please purchase a shielded USB cable.
- <3> Connect the other end of the cable to the USB connector (A type) on your computer.  
The machine is found and a Plug and Play window appears.

Note: If your computer is not compatible with USB 2.0 (Hi-Speed), the "USB 2.0 mode switching" setting in the machine's user program must be set to "Full-Speed". For more information, see "USER PROGRAMS".



14) Follow the instructions in the plug and play window to install the driver.

When the "Found New Hardware Wizard" appears, select "Install the software automatically (Recommended)", click the "Next" button, and follow the on-screen instructions.

Caution:

- If you are using Windows Vista/7 and a security warning window appears, be sure to click "Install this driver software anyway".
- If you are running Windows 2000/XP and a warning message appears regarding the Windows logo test or digital signature, be sure to click "Continue Anyway" or "Yes".

**This completes the installation of the software.**

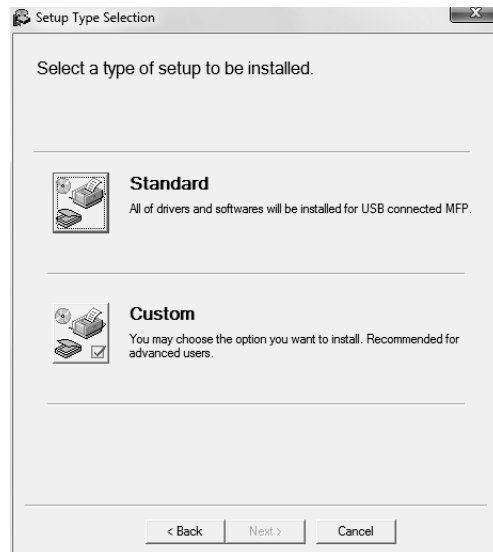
- If you installed Button Manager, set up Button Manager as explained in "SETTING UP BUTTON MANAGER".
- If you installed Sharpdesk, the Sharpdesk setup screen will appear. Follow the instructions in the screen to set up Sharpdesk.

## (1) Using the machine as a shared printer

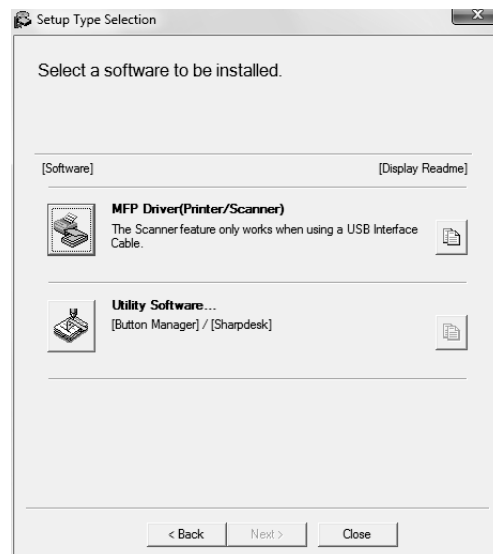
If the machine will be used as a shared printer on a network, follow these steps to install the printer driver in the client computer.

Note: To configure the appropriate settings in the print server, see the operation manual or help file of your operating system.

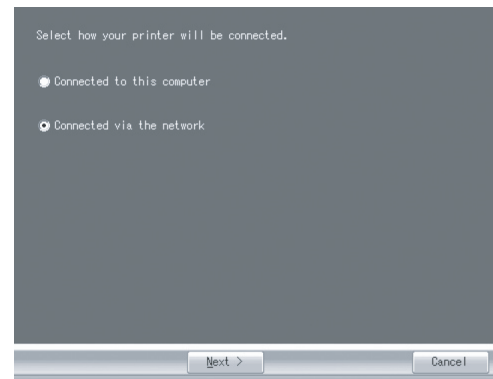
- 1) Perform steps 2) through 6) in "Installing the software".
- 2) Click the "Custom" button.



- 3) Click the "MFP Driver" button.  
Click the "Display Readme" button to show information on packages that are selected.



- 4) Select "Connected via the network" and click the "Next" button.





- 5) Select the printer name (configured as a shared printer).
    - <1> Select the printer name (configured as a shared printer on a print server) from the list.  
In Windows 2000/XP, you can also click the "Add Network Port" button displayed below the list and select the printer to be shared by browsing the network in the window that appears.
    - <2> Click the "Next" button.  
Follow the on-screen instructions.
- Note: If the shared printer does not appear in the list, check the settings on the print server.
- Caution:
- If you are using Windows Vista/7 and a security warning window appears, be sure to click "Install this driver software anyway".
  - If you are running Windows 2000/XP and a warning message appears regarding the Windows logo test or digital signature, be sure to click "Continue Anyway" or "Yes".
- 6) You will return to the window of step 3). Click the "Close" button.
- Note: After the installation, a message prompting you to restart your computer may appear. In this case, click the "Yes" button to restart your computer.

This completes the installation of the software.

### C. Configuring the printer driver

After installing the MFP driver, you must configure the printer driver settings appropriately for the size of paper loaded in each.

- 1) Click the "Start" button, click "Control Panel", and then click "Printer".
    - In Windows 7, click the "start" button and then click "Devices and Printers".
    - In Windows XP, click the "start" button and click "Printers and Faxes".
    - In Windows 2000, click the "Start" button, select "Settings", and then click "Printers".
- Note: In Windows XP, if "Printers and Faxes" does not appear in the "start" menu, select "Control Panel", select "Printers and Other Hardware", and then select "Printers and Faxes".
- 2) Open the printer properties window.
    - <1> Right-click the printer driver icon of the machine.
    - <2> Select "Properties".  
In Windows 7, click the "Printer properties" menu.
  - 3) Click the "Configuration" tab.
  - 4) Click the "Set Tray Status" button and select the size of paper that is loaded in each tray.  
Select a tray in the "Paper Source" menu, and select the size of paper loaded in that tray from the "Set Paper Size" menu.  
Repeat for each tray.
  - 5) Click the "OK" button in the "Set Tray Status" window.
  - 6) Click the "OK" button in the printer properties window.

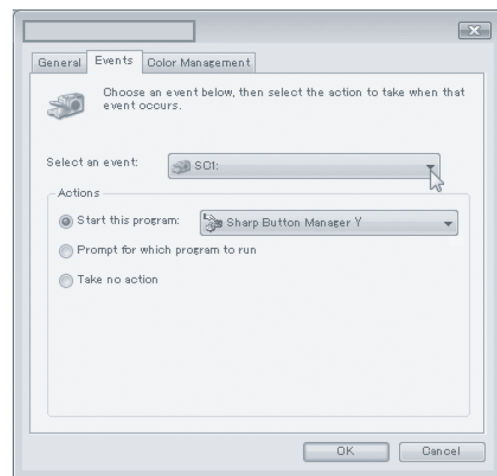
### D. Setting up Button Manager

Button Manager is a software program that works with the scanner driver to enable scanning from the machine.

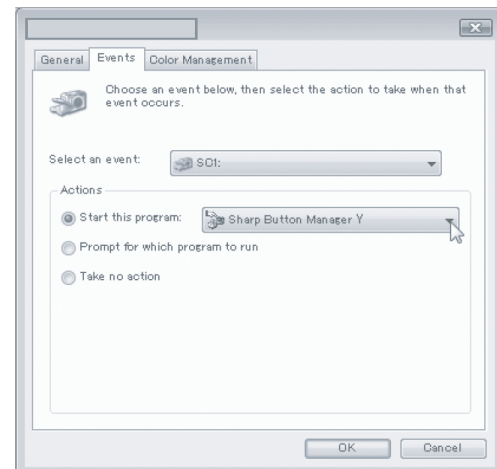
To scan using the machine, Button Manager must be linked with the scan menu on the machine. Follow the steps below to link Button Manager to scanner events.

#### (1) Windows XP/Vista/7

- 1) Click the "Start" button, click "Control Panel", click "Hardware and Sound", and then click "Scanners and Cameras".
  - In Windows 7, click the "start" button and then click "Devices and Printers".
  - In Windows XP, click the "start" button, select "Control Panel" and click "Printers and Other Hardware", and then click "Scanners and Cameras".
- 2) Click the "SHARP MX-xxxx" icon and select "Properties".
  - In Windows 7, right-click the "SHARP MX-xxxx" icon and select "Scan properties".
  - In Windows XP, select "Properties" from the "File" menu.
- 3) In the "Properties" screen, click the "Events" tab.
- 4) Select "SC1:" from the "Select an event" pull-down menu.



- 5) Select "Start this program" and then select "Sharp Button Manager Y" from the pull-down menu.

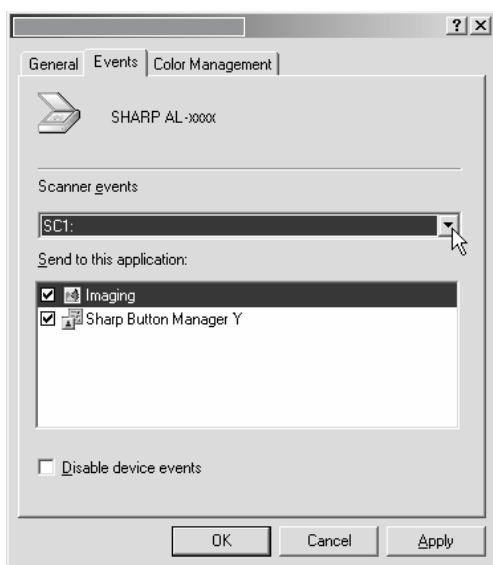


- 6) Repeat Steps 4 and 5 to link Button Manager to "SC2:" through "SC6:".
  - Select "SC2:" from the "Select an event" pull-down menu.
  - Select "Start this program", select "Sharp Button Manager Y" from the pull-down menu. Do the same for each ScanMenu through "SC6:".

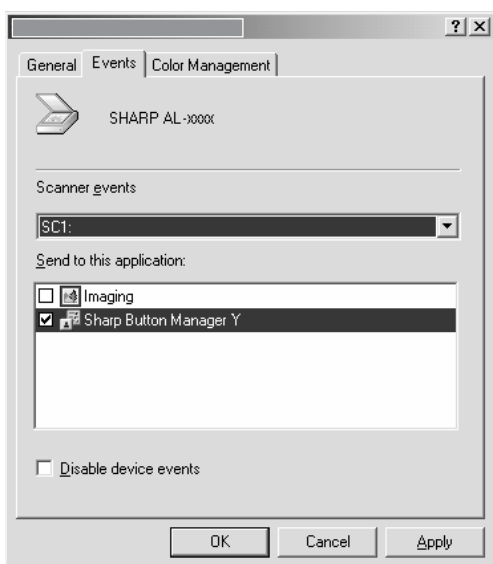
- 7) Click the "OK" button.  
Button Manager is now linked to the scan menu (1 through 6). The scan settings for each of scan menu 1 through 6 can be changed with the setting window of Button Manager.  
For the factory default settings of the scan menu and the procedures for configuring Button Manager settings, see "Button Manager settings".

## (2) Windows 2000

- 1) Click the "Start" button, select "Settings", and then click "Control Panel".
- 2) Double-click the "Scanners and Cameras" icon.
- 3) Select "SHARP MX-xxxx" and click the "Properties" button.
- 4) In the "Properties" screen, click the "Events" tab.
- 5) Select "SC1:" from the "Scanner events" pull-down menu.



- 6) Select "Sharp Button Manager Y" in "Send to this application".  
Note: If other applications are shown, deselect the checkboxes for the other applications and leave only the Button Manager checkbox selected.



- 7) Click the "Apply" button.

- 8) Repeat Steps 5) through 7) to link Button Manager to "SC2:" through "SC6:". Select "SC2:" from the "Scanner events" pull-down menu. Select "Sharp Button Manager Y" in "Send to this application" and click the "Apply" button. Do the same for each ScanMenu through "SC6:". When the settings have been completed, click the "OK" button to close the screen.

Button Manager is now linked to the scan menu (1 through 6). The scan settings for each of scan menu 1 through 6 can be changed with the setting window of Button Manager.  
For the factory default settings of the scan menu and the procedures for configuring Button Manager settings, see "Button Manager settings".

## 11. Interface

### A. USB

#### Connector

Type-B connector

#### Cable

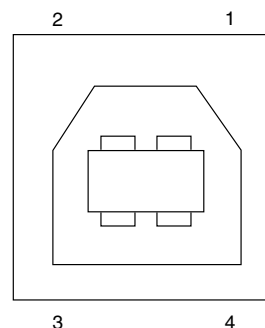
Shielded twisted pair cable

(2 m (6 feet) Max.: high-speed transmission equivalent)

#### Pin configuration

The pin numbers and signal names are listed in the following table.

Pin No.	Signal name
1	+5V
2	-DATA
3	+DATA
4	GND



## 12. Moving

### Moving instructions

When moving the unit, follow the procedure below.

Note: When moving this unit, be sure to remove the TD cartridge in advance.

- 1) Turn the power switch off and remove the power cord from the outlet.
- 2) Open the side cover and front cover, in that order. Remove the TD cartridge and close the front cover and side cover, in that order.

To open and close the side cover and front cover, and to remove the TD cartridge.

- 3) Raise the handle of the paper tray and pull the paper tray out until it stops.
- 4) Push the center of the pressure plate down until it locks in place and lock the plate using the pressure plate lock which has been stored in the front of the paper tray.
- 5) Push the paper tray back into the unit.
- 6) Lock the scan head locking switch.

Note: When shipping the unit, the scan head locking switch must be locked to prevent shipping damage.

- 7) Close the multi-bypass tray and the paper output tray extension, and attach the packing materials and tape which were removed during installation of the unit.
- 8) Pack the unit into the carton.

## 13. Scanner moisture-proof kit

If the machine is installed in a highly humid environment, you can alleviate dew condensation inside the scanner by installing the scanner moisture-proof kit described below.

### A. Components

Scanner moisture-proof kit (DKIT-0016QSZZ)

	Name	Part code	Qty
1	Scanner condensation prevention mylar	PSHEZ0493QSZZ	3
2	Optical right hole mylar B	PSHEZ0469QSZZ	2
3	Scanner motor metal plate cushion	PMLT-0106QSZZ	2
4	Scanner upper surface cushion	PMLT-0105QSZZ	1
5	Scanner motor lower mylar	PSHEP0600QSZZ	1
6	Scanner UPG mylar J3	PSHEP0599QSZZ	1
7	Fan housing cushion	PMLT-0108QSZ1	1

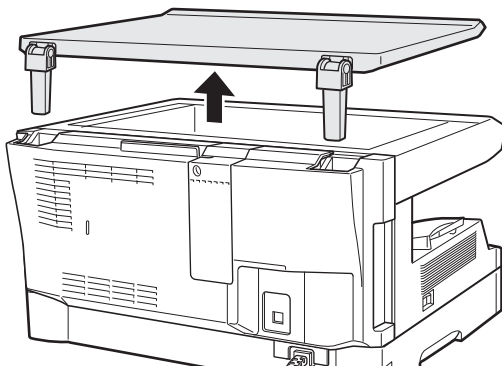
### B. Precautions at installation

Clean the position where each cushion/mylar is attached with industrial alcohol before the work.

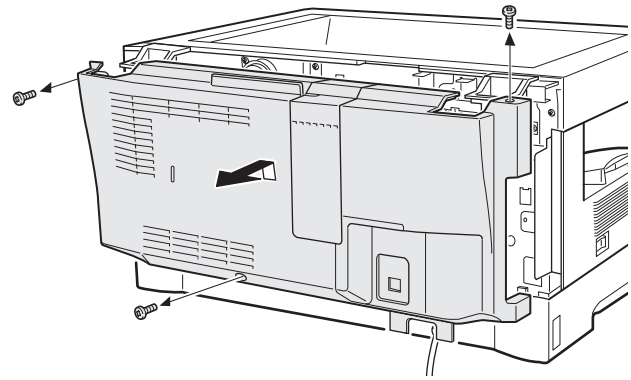
### C. Attachment method

Turn the main switch to the "OFF" position and remove the power plug from the outlet.

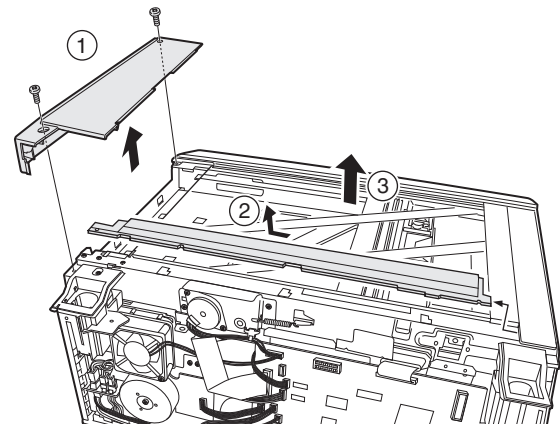
- 1) Remove original cover.



- 2) Remove the rear cabinet.  
Remove the three screws and then remove the rear cabinet.



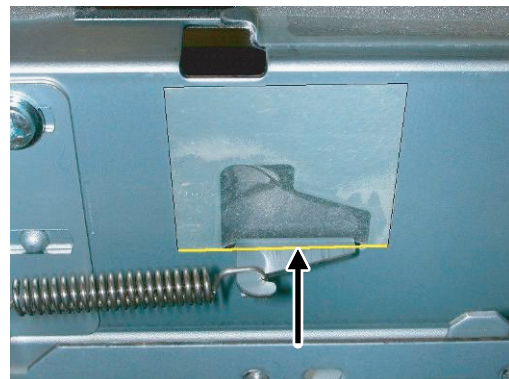
- 3) Remove the rear cover for the document glass.
  - <1> Remove the two screws and then remove the right glass holder.
  - <2> Slide the rear cover for the document glass to remove it.
  - <3> Remove the table glass.



- 4) Attach the Scanner condensation prevention mylar at the 3 positions on the rear side of the main unit as described below.

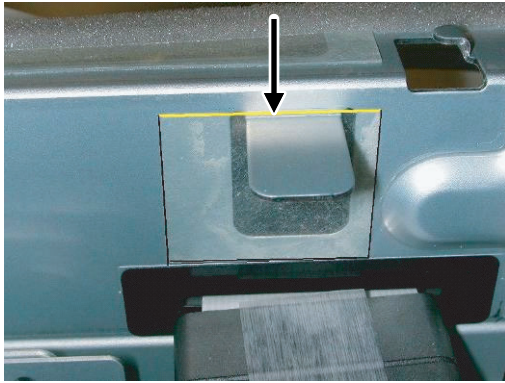
Note: The hole should be covered with the mylar.

Align the edge of the mylar to the R part (the yellow line in the diagram below) so that the hole of the metal plate is covered as much as possible.

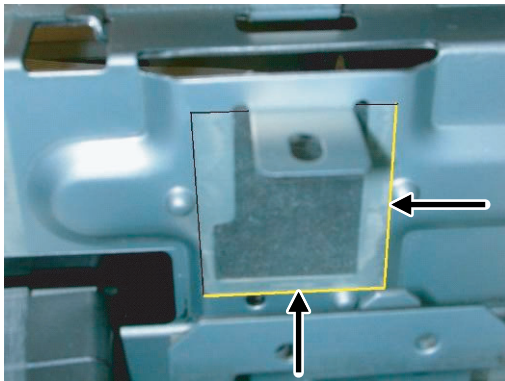




Align the edge of the mylar to the R part (the yellow line in the diagram below) so that the hole of the metal plate is covered as much as possible.



Attach along the edge of the projection (the yellow line in the diagram below).

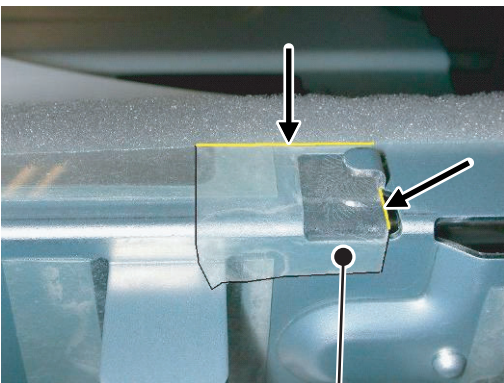


- 5) Attach the Optical right hole mylar B at the 2 positions shown in the diagrams below which are at the top of the rear side of the main unit.

Note: The holes should be covered with the mylar.

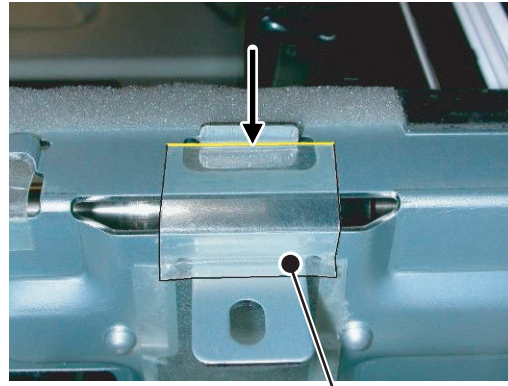
Attach along the edge of the cushion (the yellow line in the diagram below).

Align with the inside line of the bent part (the yellow line in the diagram below).



Stick the excessive part on the side.

Align with the raised part (the yellow line in the diagram below). Match the center of the mylar (in the horizontal direction) to the center of the raised part.

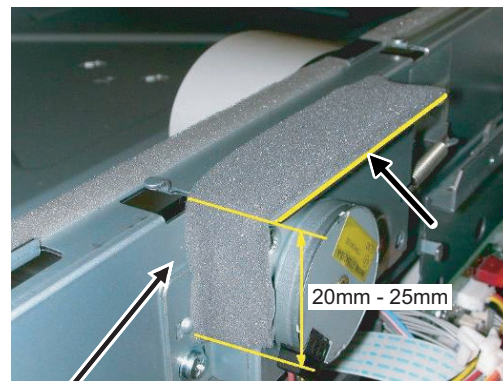


Stick the excessive part on the side.

- 6) Attach the Scanner motor metal plate cushion at 1 position on the attachment plate of the motor on the rear side of the main unit.

Note: The hole on the top of the motor unit should be covered with the mylar.

Align the edge of the metal plate and the edge of the cushion (the yellow line in the diagram below).

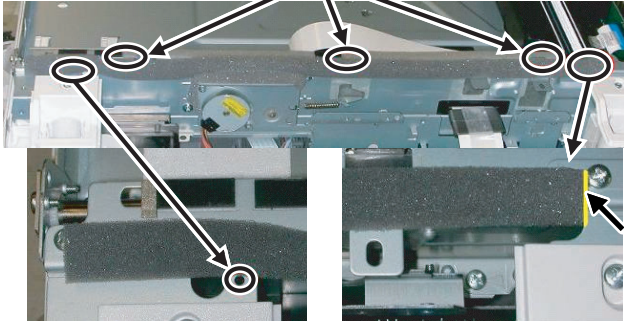
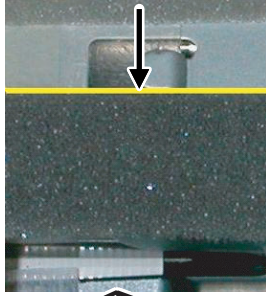


Press and attach the cushion aligning it to the metal plate so that there will be no gap between them.



- 7) Attach the Scanner upper surface cushion on the top and the rear side at the rear side of the main unit.

Align the cushion with the side of the raised part (the yellow line in the diagram below).



Do not cover this hole.

Align the edge of the cushion with the edge of the metal plate.

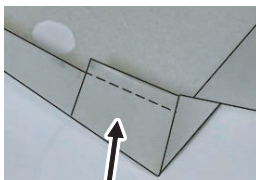
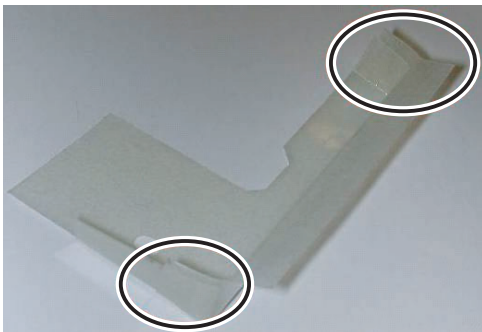
Bend the part which is sticking out to the rear side of the scanner and attach to the surface.



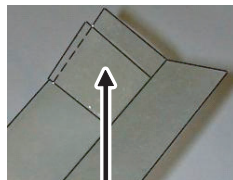
Press the cushion at the steps shown in the diagram so that there will be no gap.

Press the cushion to make sure all the holes are covered.

- 8) Bend the edge of the Scanner motor lower mylar and stick together.



Stick together.



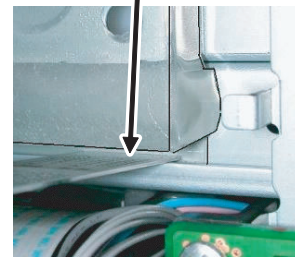
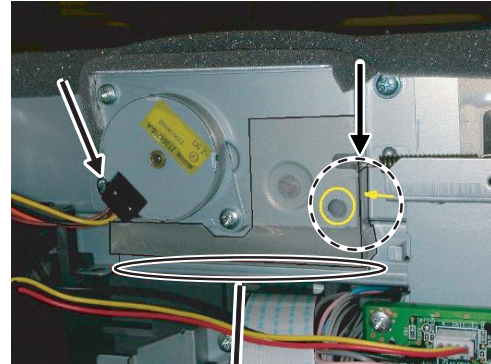
Stick together.

- 9) Attach the Scanner motor lower mylar at 1 position under the motor attachment plate on the rear side of the main unit.

Note: The mylar should cover the hole under the motor unit.

Attach matching the hole (the yellow mark in the diagram) and along with the side edge (the yellow arrow in the diagram).

Disconnect the motor harness from the connector and take off the snap band from the hole.

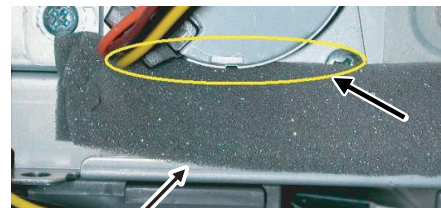


Press the mylar with a sharp-pointed stick or something so that it is stuck correctly.

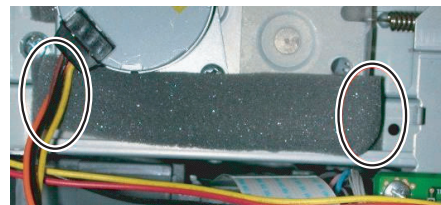
- 10) Attach the Scanner motor metal plate cushion covering the bottom part of the Scanner motor lower mylar.

Note: The hole under the motor unit should be covered.

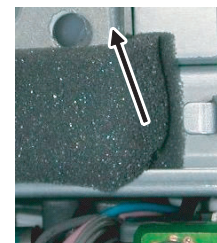
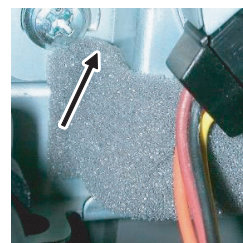
Attach the cushion to cover the gap between the mylar and the metal plate (the yellow mark).



Stick the lower part of the cushion to the mylar, too.

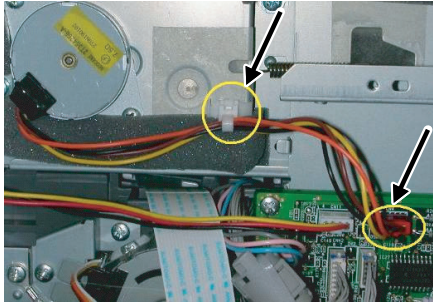


Press the cushion with a sharp-pointed stick or something to fill the gap between the mylar and the metal plate.





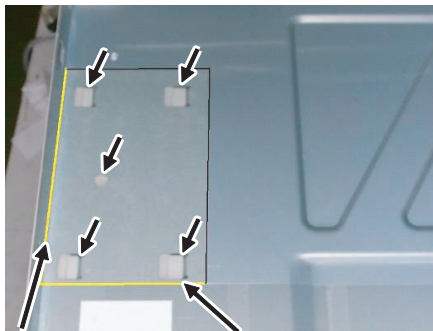
- 11) Attach the motor connector and the snap band to the original position.



- 12) Attach the Scanner UPG mylar J3 to cover the hole on the right side of inside of the scanner.

Note: The mylar should cover the hole shown by the arrow in the diagram.

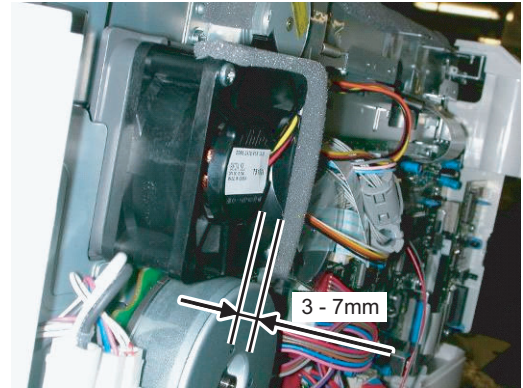
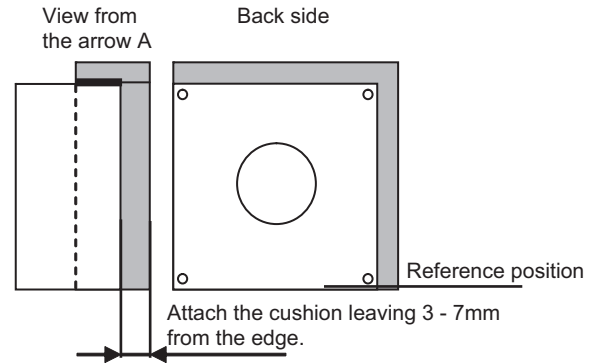
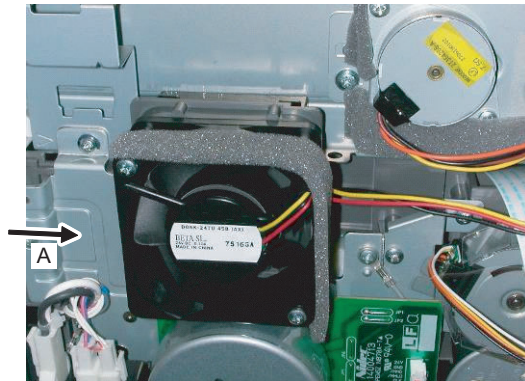
Attach along with the bent part of the metal plate and align the edge of the mylar with the line shown in the diagram (the yellow line in the diagram).



- 13) Attach the Fan housing cushion to the cooling fan at the position shown in the diagram below.

Cover the top and the right side of the fan housing when you see the fan housing from the backside of the machine.

Note: Please make sure the double-sided tape is not exposed where the cushion is sticking out from the edge of the fan housing.

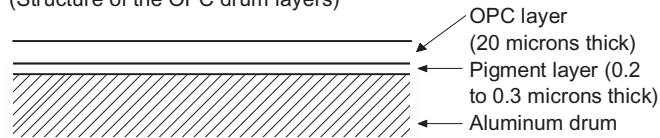


Attach the cushion leaving 3 - 7mm from the edge so that the gap between the Fan housing cushion and the filter of the rear cabinet is filled for sure.

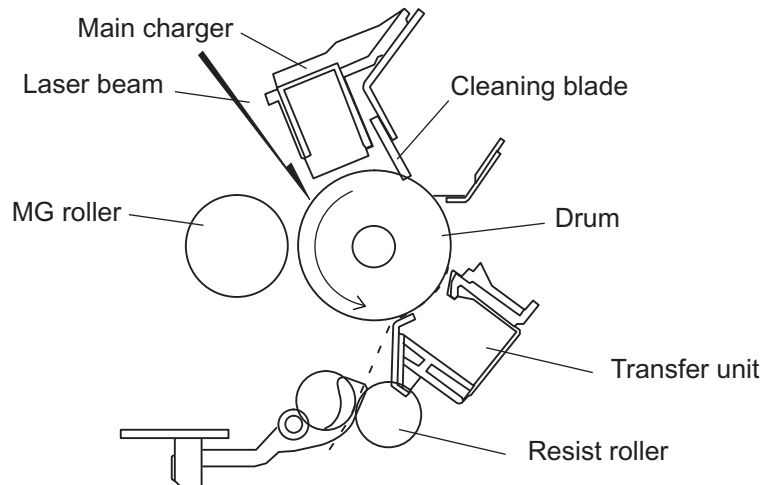
- 14) Attach the parts removed in the items 1), 2), and 3).

## [6] COPY PROCESS

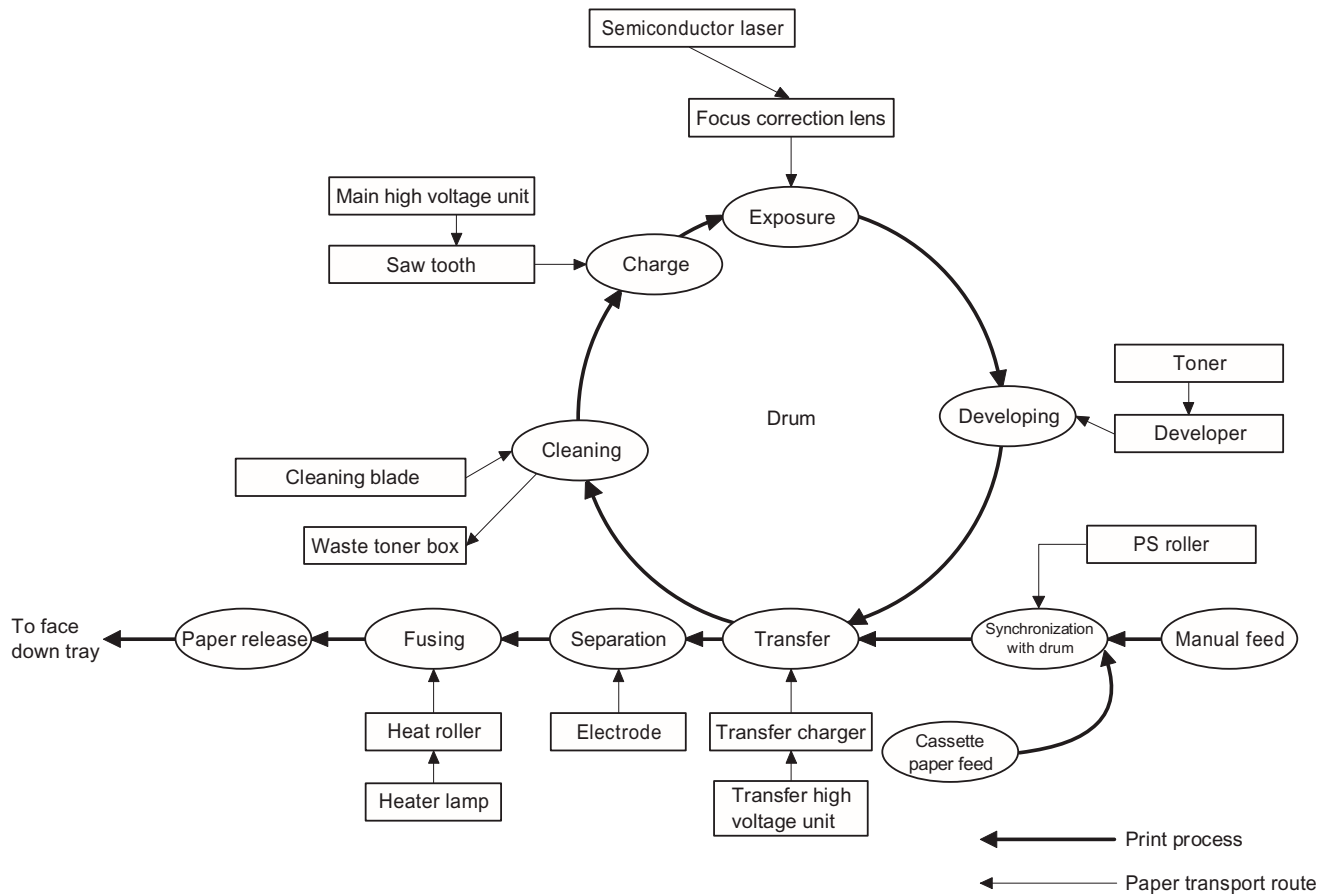
An OPC drum is used for the photoconductor.  
(Structure of the OPC drum layers)



### 1. Functional diagram



(Basic operation cycle)



## 2. Outline of print process

This printer is a non-impact printer that uses a semiconductor laser and electrostatic print process. This printer uses an OPC (Organic Photo Conductor) for its photoconductive material.

First, voltage from the main corona unit charges the drum surface and a latent image is formed on the drum surface using a laser beam. This latent image forms a visible image on the drum surface when toner is applied. The toner image is then transferred onto the print paper by the transfer corona and fused on the print paper in the fusing section with a combination of heat and pressure.

### Step-1: Charge

## Step-2: Exposure

\* Latent image is formed on the drum.

### Step-3: Developing

Latent image formed on the drum is then changed into visible image with toner.

#### Step-4: Transfer

The visible image (toner image) on the drum is transferred onto the print paper.

### Step-5: Cleaning

Residual toner on the drum surface is removed and collected by the cleaning blade.

### Step-6: Optical discharge

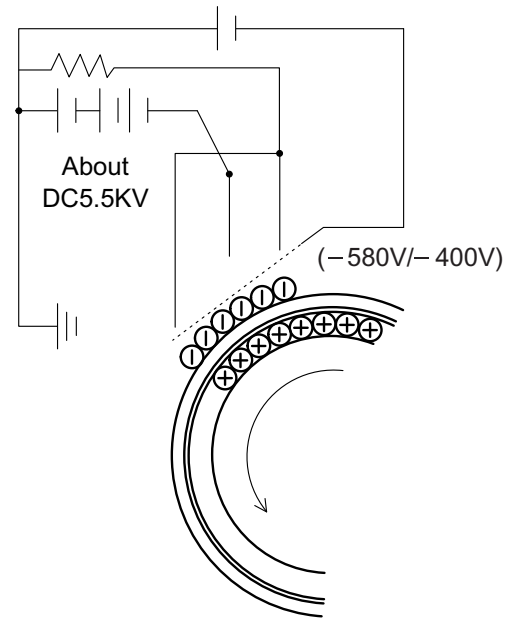
Residual charge on the drum surface is removed, by semiconductor laser beam.

### 3. Actual print process

### Step-1: DC charge

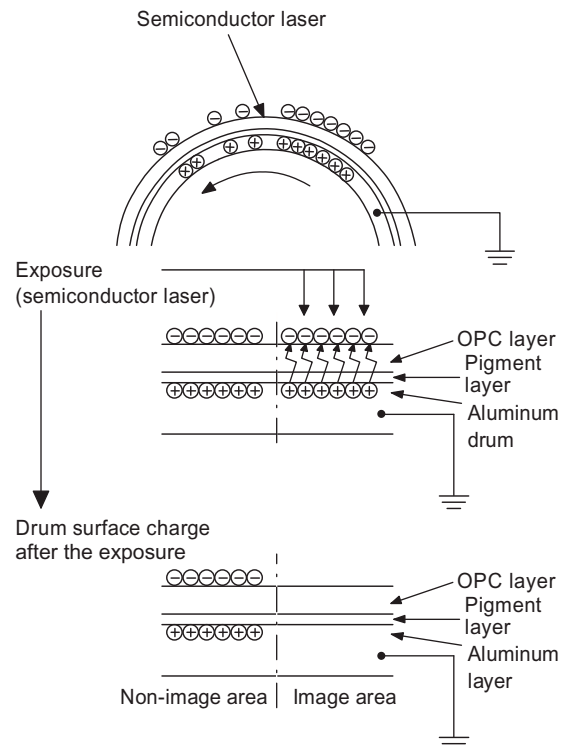
A uniform negative charge is applied over the OPC drum surface by the main charging unit. Stable potential is maintained by means of the Scorotron charger.

Positive charges are generated in the aluminum layer.



**Step-2: Exposure (laser beam, lens)**

A Laser beam is generated from the semiconductor laser and controlled by the print pattern signal. The laser writes onto the OPC drum surface through the polygon mirrors and lens. The resistance of the OPC layer decreases for an area exposed by the laser beam (corresponding to the print pattern signal). The beam neutralizes the negative charge. An electrostatic latent image is formed on the drum surface.

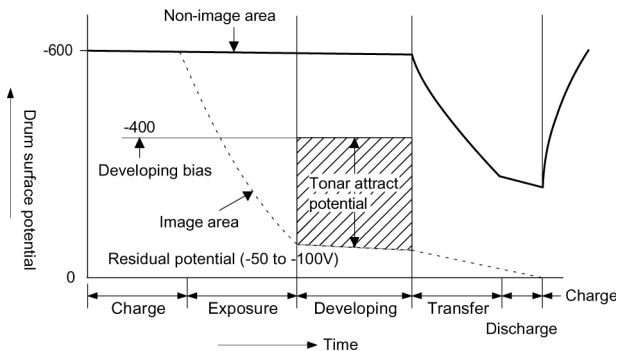
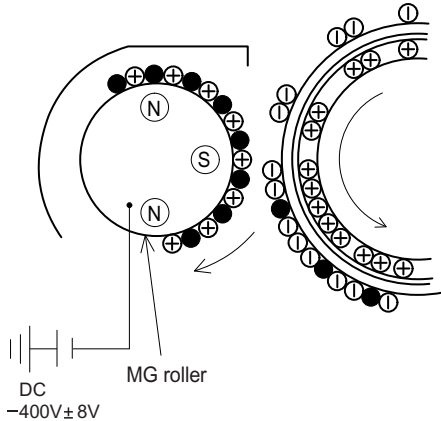


### Step-3: Developing (DC bias)

A bias potential is applied to the MG roller in the two component magnetic brush developing method, and the toner is charged negative through friction with the carrier.

Non-image area of the drum surface charged with negative potential repel the toner, whereas the laser exposed portions where no negative charges exist, attract the toner. As a result, a visible image appears on the drum surface.

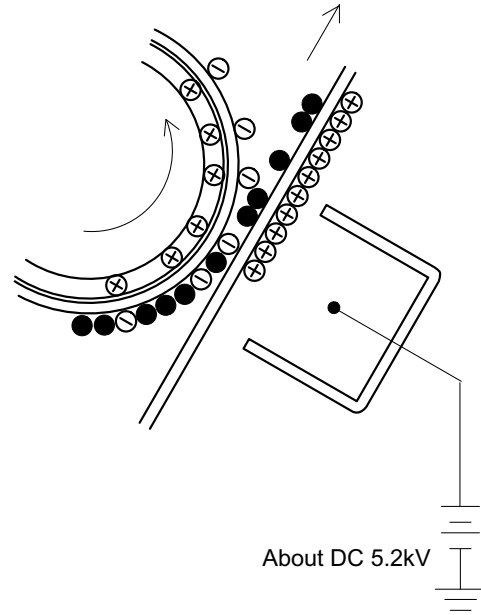
- ⊕ :Carrier (Magnetized particle)
- :Toner (Charge negative by friction)
- (N) (S) Permanent magnet  
(provided in three locations)



Toner is attracted over the shadowed area because of the developing bias.

### Step-4: Transfer

The visible image on the drum surface is transferred onto the print paper by applying a positive charge from the transfer corona to the backside of the print paper.

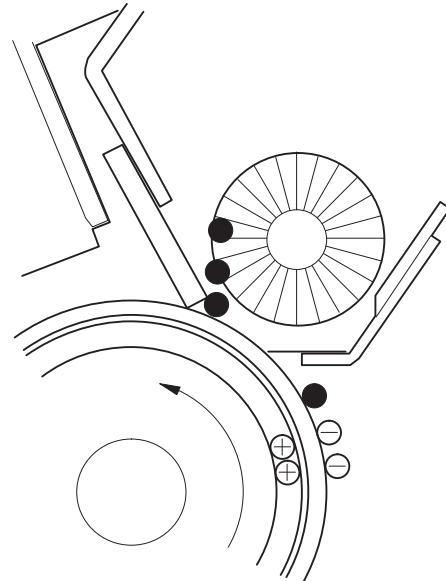


### Step-5: Separation

Since the print paper is charged positively by the transfer corona, it is discharged by the separation corona. The separation corona is connected to ground.

### Step-6: Cleaning

Toner remaining on the drum is removed and collected by the cleaning blade. It is transported to the waste toner collecting section in the cleaning unit by the waste toner transport roller.



Before the drum rotation is stopped, the semiconductor laser is radiated onto the drum to reduce the electrical resistance in the OPC layer and eliminate residual charge, providing a uniform state to the drum surface for the next page to be printed.

Diagram illustrating a Semiconductor laser structure. The structure is shown as a curved waveguide with positive (+) and negative (-) charges distributed along its length. An arrow points to the structure with the label "Semiconductor laser".

## Function

## Basic function

As the photoconductor is charged by the saw tooth from the main corona unit, the surface potential increases. This increases the current flowing through the screen grid. When the photoconductor potential nears the grid potential, the current turns to flow to the grid so that the photoconductor potential can be maintained at a stable level.

## Function

To avoid this, the process is controlled by adjusting the drum potential and the grid potential of the Scorotron charger.

## Basic function

The diagram illustrates the timing of four electrostatic potentials during the printing process:

- 1) Low:** The Drum potential is set to a low level.
- 2) Toner attract potential:** A positive potential is applied to attract toner to the drum.
- 3) Print potential:** A higher positive potential is applied to transfer the toner from the drum to the paper.
- 4) High:** The Drum potential is set to a high level to prevent toner from adhering to the drum during the next cycle.

The diagram also shows the relative levels of the Drum potential, Developing bias, and Toner attract potential over time, from START to STOP.

- 1) Because the grid potential is at a low level, the drum potential is at about -400V. (Carrier may not be attracted though the carrier is pulled towards the drum by the electrostatic force of -400V.
- 2) Developing bias (-400V) is applied when the photoconductor potential is switched from LOW to HIGH.
- 3) Once developing bias (-400V) is applied and the photoconductor potential rises to HIGH, toner will not be attracted to the drum.

The reverse sequence takes place.

## Function

### Basic function

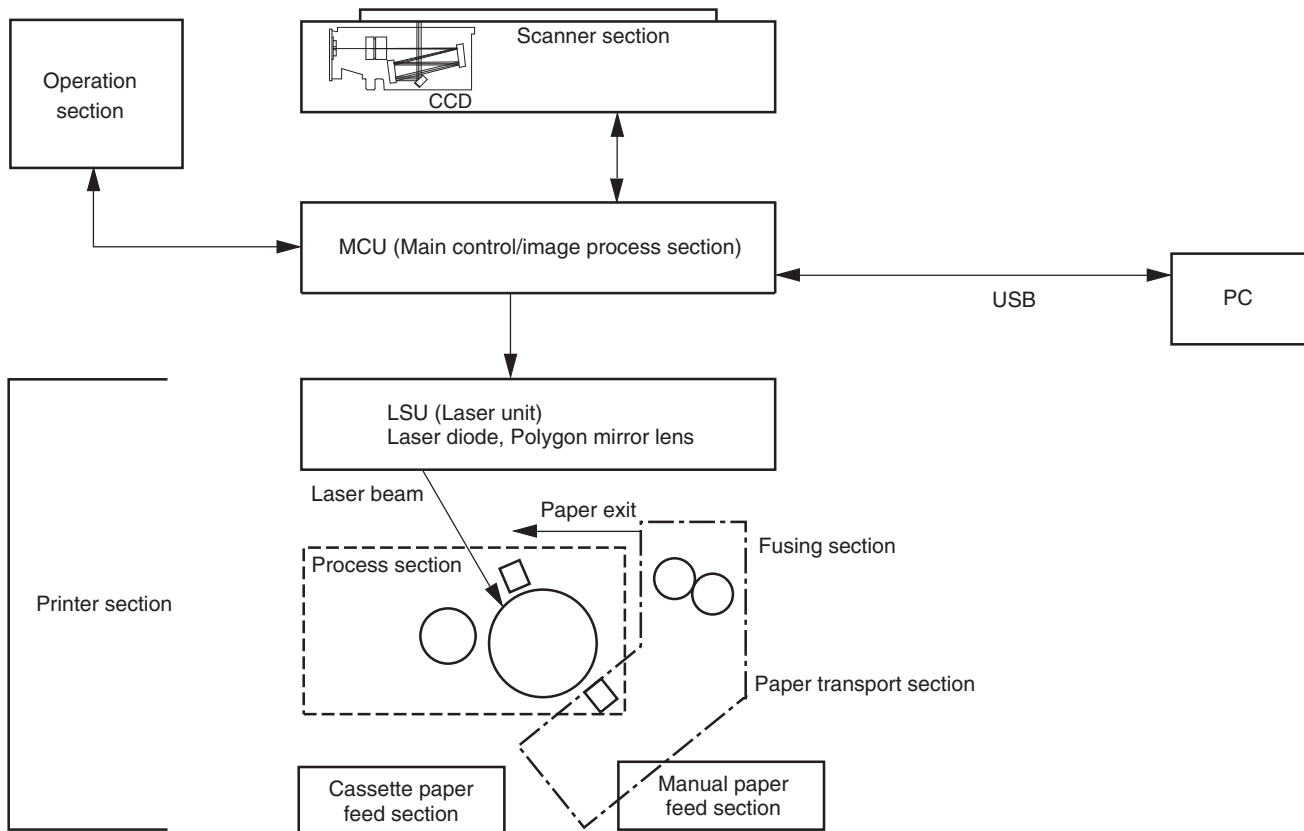
Normally, the developing bias voltage is retained for a certain time before the drum comes to a complete stop if the machine should stop before completing the normal print cycle. The developing bias can be added before resuming the operation after an abnormal interruption. Therefore, carrier will not make a deposit on the drum surface.

## [7] OPERATIONAL DESCRIPTIONS

### 1. Outline of operation

The outline of operation is described referring to the basic configuration.

#### (Basic configuration)



#### (Outline of copy operation)

##### Setting conditions

- 1) Set copy conditions such as the copy quantity and the copy density with the operation section, and press the Start key. The information on copy conditions is sent to the MCU.

##### Image scanning

- 2) When the Start key is pressed, the scanner section starts scanning of images.  
The light from the copy lamp is reflected by the document and passed through the lens to the CCD.

##### Photo signal/Electric signal conversion

- 3) The image is converted into electrical signals by the CCD circuit and passed to the MCU.

##### Image process

- 4) The document image signal sent from the CCD circuit is processed under the revised conditions and sent to the LSU (laser unit) as print data.

##### Electric signal/Photo signal (laser beam) conversion

- 5) The LSU emits laser beams according to the print data.  
(Electrical signals are converted into photo signals.)
- 6) The laser beams are radiated through the polygon mirror and various lenses to the OPC drum.

#### Printing

- 7) Electrostatic latent images are formed on the OPC drum according to the laser beams, and the latent images are developed to be visible images (toner images).
- 8) Meanwhile the paper is fed to the image transfer section in synchronization with the image lead edge.
- 9) After the transfer of toner images onto the paper, the toner images are fused to the paper by the fusing section. The copied paper is discharged onto the exit tray.

#### (Outline of printer operation)

The print data sent from the PC are passed through the USB connector and the MCU to the LSU. The procedures after that are the same as above 5) and later.

#### (Outline of scanner operation)

The scan data are passed through the MCU to the PC according to the conditions requested by the operations with the operation panel.



## 2. Scanner section

### A. Scanner unit

The scanner unit in the digital copier scans images.

It is composed of the optical unit and the drive unit. The optical unit performs scanning in the main scan direction with the light receiving elements (color CCD). The drive unit performs scanning in the sub scanning direction by moving the optical unit.

### B. Optical system

Two white lamps are used as the light source.

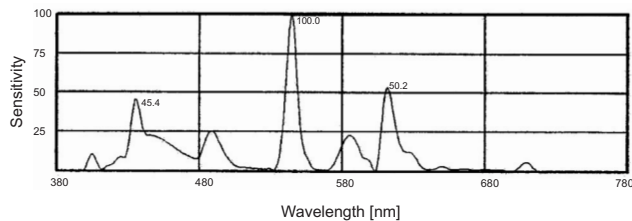
Light radiated from the light source is applied to the document on the document table. The reflected light from the document is reflected 4 times by No. 1 - No. 3 mirrors and passed through the reduction lens to form images on the light-receiving surface of 3-line CCD.

The light-receiving surface of the color CCD is provided with 3 line scanning sections for RGB. Separate images scanned in each color section are overlapped to complete color scanning. (When PC scanning)

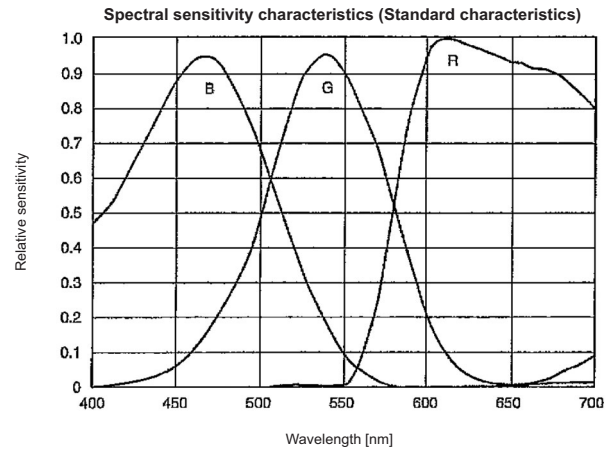
The resolution is 600dpi.

When copying, only the green component is used to print with the printer.

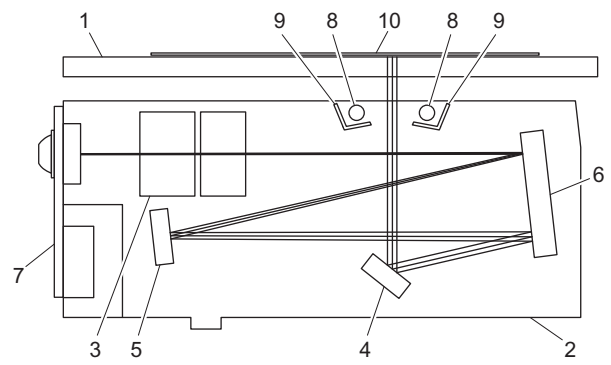
The color component for printing can be switched to red or blue by the service simulation.



(Spectrum characteristics of the lamp)



(Spectrum characteristics of the color CCD)



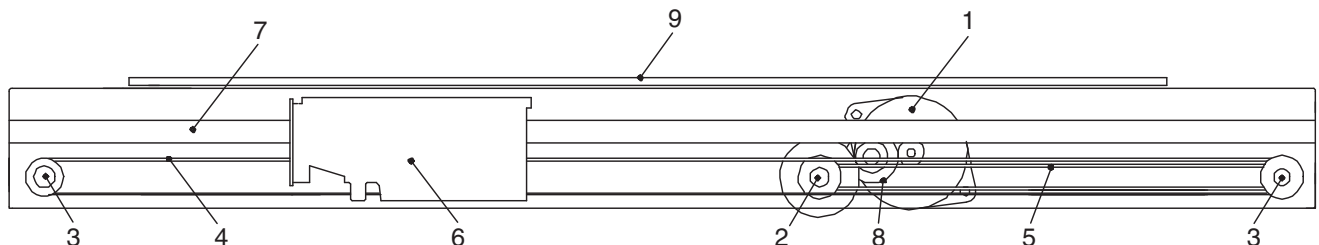
(Optical unit)

1	Table glass	2	Optical unit	3	Lens
4	Mirror 1	5	Mirror 2	6	Mirror 3
7	CCD PWB	8	Lamp	9	Reflector
10	Original				

### C. Drive system

The drive system is composed of the scanner motor, the pulley gear, the idle pulley, the idle gear, the belt 473, the belt 190, and the shaft.

The motor rotation is converted into reciprocated movements of the belt 473 through the idle gear, the pulley gear, the belt 190, and the idle pulley to drive the optical unit.



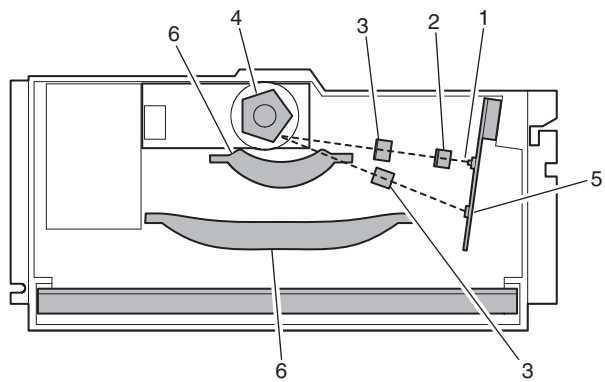
1	Scanner motor	2	Pulley gear	3	Idle pulley
4	Belt 473	5	Belt 190	6	Optical unit
7	Shaft	8	Idle gear	9	Table glass

3. Laser unit

The image data sent from the MCU (image process circuit) is sent to the LSU (laser unit), where it is converted into laser beams.

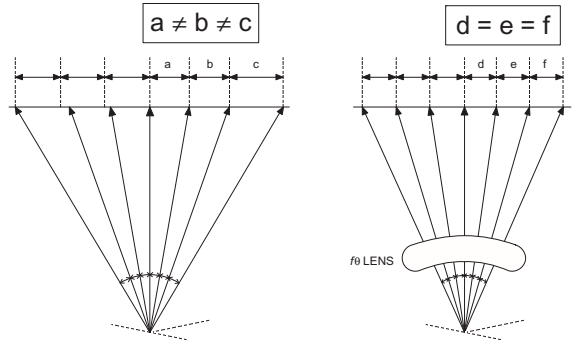
A. Basic structure

The LSU unit is the writing section of the digital optical system. The semiconductor laser is used as the light source, and images are formed on the OPC drum by the polygon mirror and fθ lens, etc. The laser beams are passed through the collimator lens, the cylindrical lens, the polygon mirror, the fθ lens, and the mirror to form images on the OPC drum in the main scanning direction. The laser emitting PWB is provided with the APC (auto power control) in order to eliminate fluctuations in the laser power. The BD PWB works for measurement of the laser writing start point.

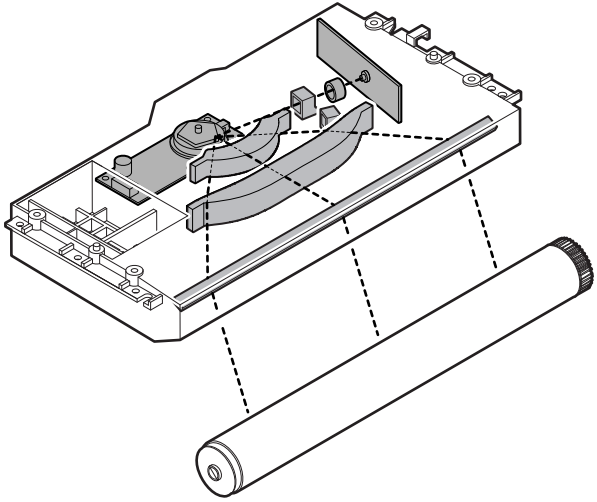


No	Component	Function
1	Semiconductor laser	Generates laser beams.
2	Collimator lens	Converges laser beams in parallel.
3	Cylinder lens	Takes the focus.
4	Polygon mirror, polygon motor	Reflects laser beams at a constant rpm.
5	BD (Lens, PWB)	Detects start timing of laser scanning.
6	fθ lens	Converges laser beams at a spot on the drum. Makes the laser scanning speeds at both ends of the drum same as each other. (Refer to the figure below.)

Makes the laser scanning speeds at both ends of the drum same as each other.



B. Laser beam path

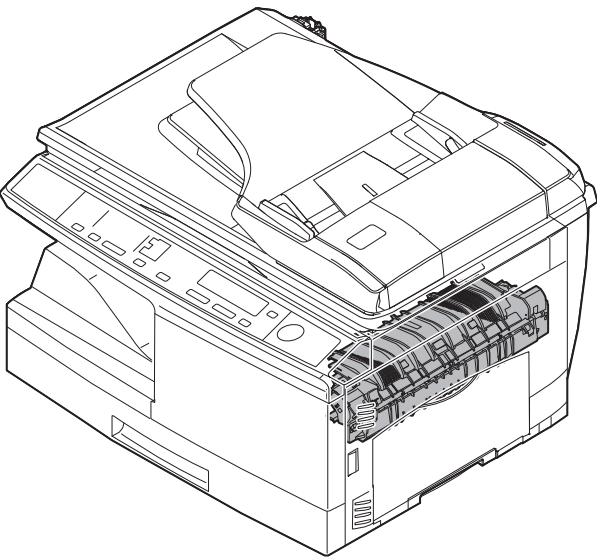


C. Composition

- Effective scanning width: 216mm (max.)
- Resolution: 600dpi
- Beam diameter: 75um in the main scanning direction, 85um in the sub scanning direction
- Image surface power: 0.16 ± 0.01mW (Laser wavelength 770 - 795nm)
- Polygon motor section: Brushless motor 35433rpm
- No. of mirror surfaces: 5 surfaces

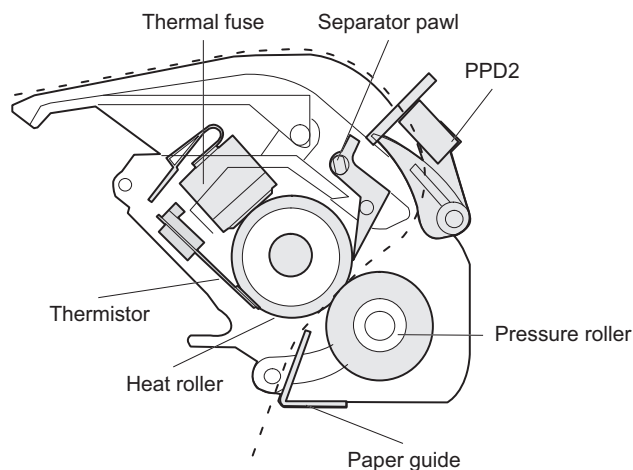
4. Fuser section

\* SPF is option.

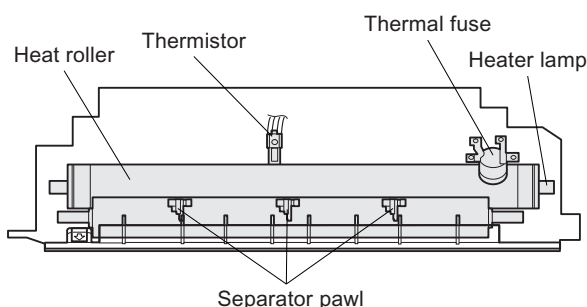


## A. General description

### General block diagram (cross section)



### Top view



#### (1) Heat roller

A Teflon roller is used for the heat roller and a silicone rubber roller is used for the lower heat roller for better toner fusing performance and paper separation.

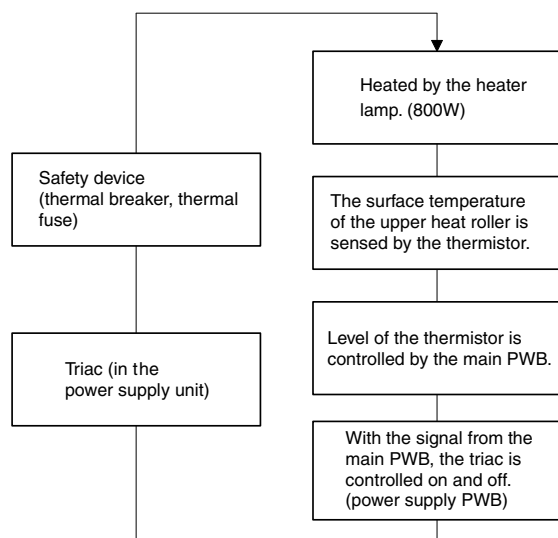
#### (2) Separator pawl

Three separator pawls are used on the upper heat roller. The separator pawls are Teflon coated to reduce friction with the roller and prevent a smear on the paper caused by the separator pawl.

#### (3) Thermal control

- 1) The heater lamp, thermistor, main PWB, DC power supply PWB, and triac within the power supply unit are used to control the temperature in the fuser unit.

To prevent against abnormally high temperature in the fuser unit, a thermal breaker and thermal fuse are used for safety purposes.



- 2) The surface temperature of the upper heat roller is set to 160 - 200°C. The surface temperature during the power save mode is set to 100°C.
- 3) The self-check function comes active when one of the following malfunctions occurs, and an "H" is displayed on the multicopy window.
  - a. When the heat roller surface temperature rises above 240°C.
  - b. When the heat roller surface temperature drops below 100°C during the copy cycle.
  - c. Open thermistor
  - d. Open thermal fuse
  - e. When the heat roller temperature does not reach 190°C within 27 second after supplying the power.

#### (4) Fusing resistor

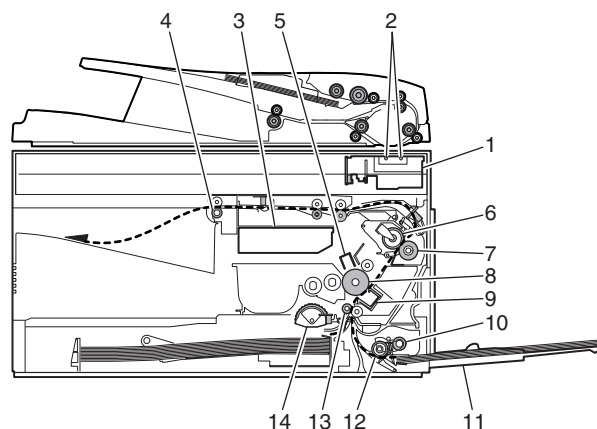
This model is provided with a fusing resistor in the fusing section to improve transfer efficiency.

Since the upper heat roller is conductive, when using copy paper that contains moisture and the distance between the transfer unit and the fusing unit is short, the transfer current may find a path to ground via the copy paper, the upper heat roller and the discharging brush.

## 5. Paper feed section and paper transport section

### A. Paper transport path and general operations

\* SPF is option.



1	Scanner unit	8	Drum
2	Copy lamp	9	Transfer unit
3	LSU (Laser unit)	10	Pickup roller
4	Paper exit roller	11	Manual paper feed tray
5	Main charger	12	Manual paper feed roller
6	Heat roller	13	PS roller unit
7	Pressure roller	14	Paper feed roller

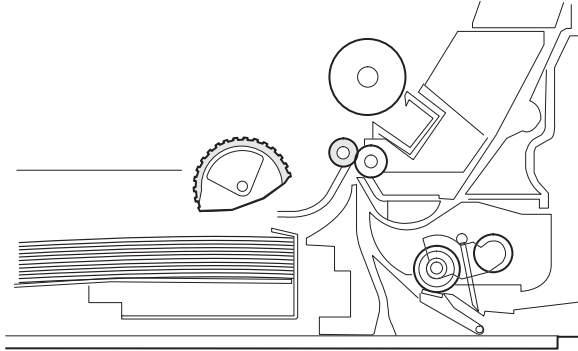
Paper feed is made in two ways; the tray paper feed and the manual paper feed. The tray is of universal-type, and has the capacity of 250 sheets.

The front loading system allows you to install or remove the tray from the front cabinet.

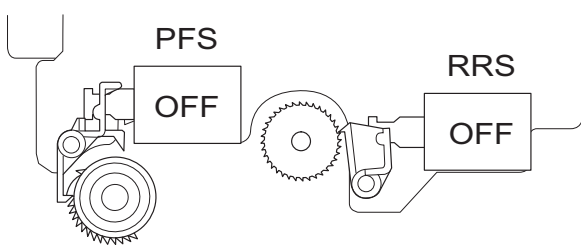
The general descriptions on the tray paper feed and the manual paper feed operation are given below.

## (1) Cassette paper feed operation

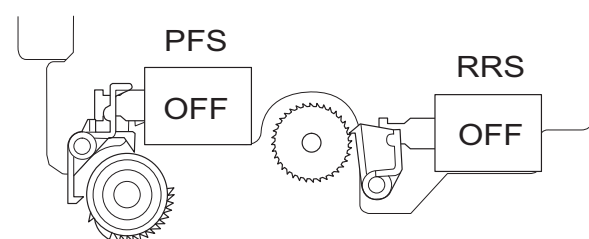
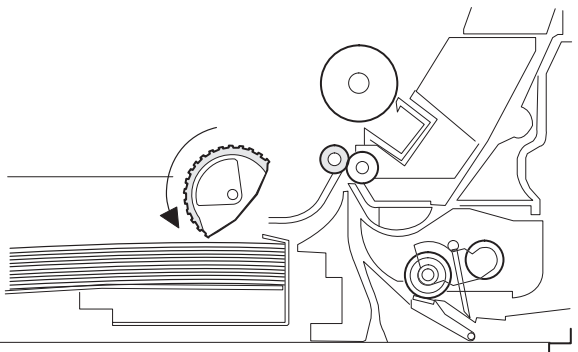
- 1) The figure below shows the positions of the pick-up roller, the paper feed clutch sleeve, and the paper feed latch in the initial state without pressing the Start key after lighting the ready lamp.  
The paper feed latch is in contact with the projection of the clutch sleeve.



- 2) When the Start key is pressed, the main drive motor starts rotating to drive each drive gear.  
The pick-up drive gear also is driven at that time. Since, however, the paper feed latch is in contact with the projection of the clutch sleeve, rotation of the drive gear is not transmitted to the pick-up roller, which does not rotate therefore.

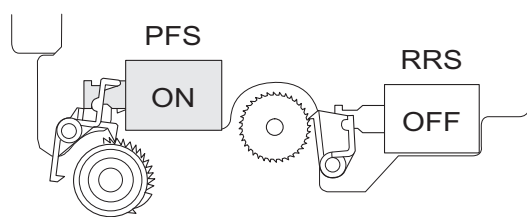
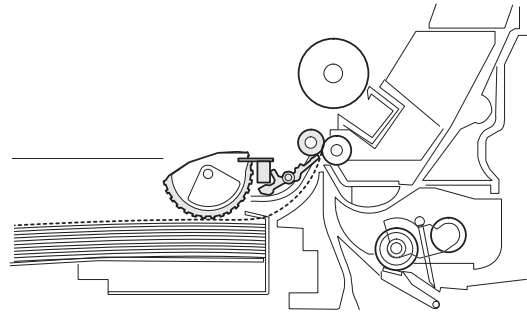


- 3) After about 0.1 sec from when the main motor start rotating, the tray paper feed solenoid (PFS) turns on for a moment.  
This disengages the paper feed latch from the projection of the clutch sleeve, transmitting rotation of the pick-up drive gear to the paper feed roller shaft, rotating the pick-up roller to feed the paper.

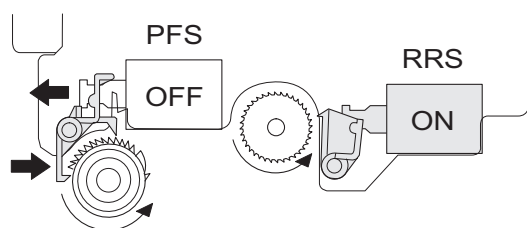
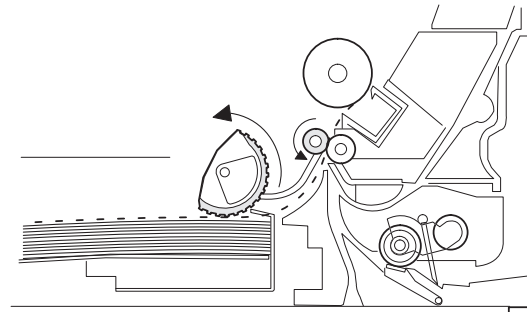


- 4) After more than half rotation of the pick-up roller, the paper feed latch is brought in contact with a notch on the clutch sleeve, stopping rotation of the pick-up roller.

- 5) At this time, the paper is fed passed the paper entry detection switch (PPD1), and detected by it. After about 0.15 sec from detection of paper by PPD1, the tray paper feed solenoid (PFS) turns on so that the clutch sleeve projection comes into contact with the paper feed latch to stop the pick-up roller. Then the pick-up roller rotates for about 0.15 sec so that the lead edge of the paper is evenly pressed on the resist roller, preventing against skew feeding.



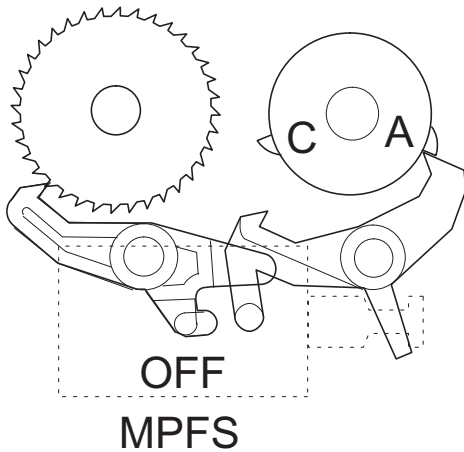
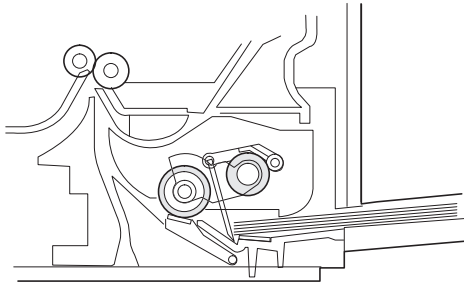
- 6) To release the resist roller, the tray paper feed solenoid and the resist solenoid are turned on by the paper start signal to disengage the resist start latch from the clutch sleeve, transmitting rotation of the resist drive gear to the resist roller shaft. Thus the paper is transported by the resist roller.
- 7) After the resist roller starts rotating, the paper is passed through the pre-transfer guide to the transfer section. Images are transferred on the paper, which is separated from the OPC drum by the drum curve and the separation section.



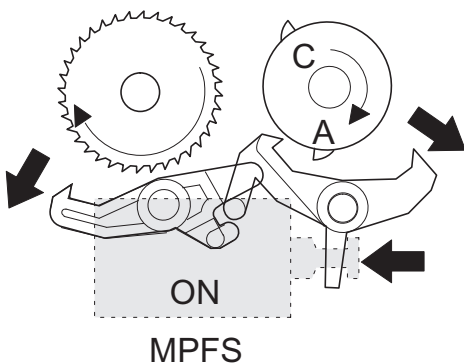
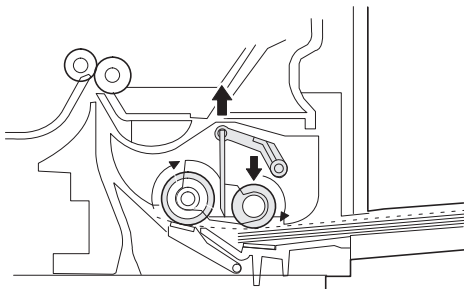
- 8) The paper separated from the drum is passed through the fusing paper guide, the heat roller (fusing section), POD (paper out detector) to the copy tray.

## (2) Manual multi paper feed operation

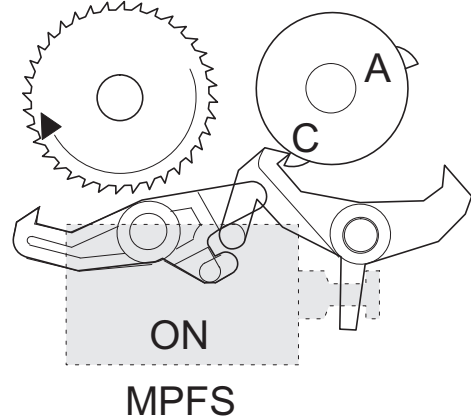
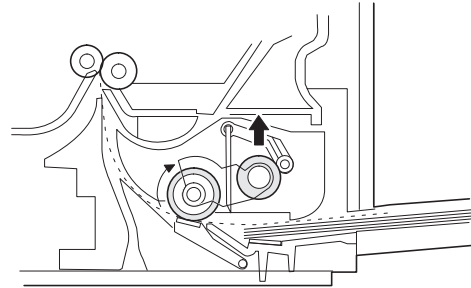
- 1) Before paper feed operation, the manual paper feed solenoid (MPFS) is turned OFF as shown in the figure below.



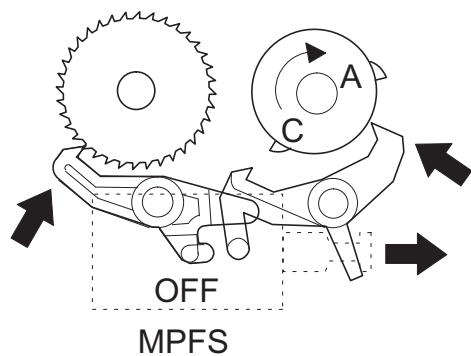
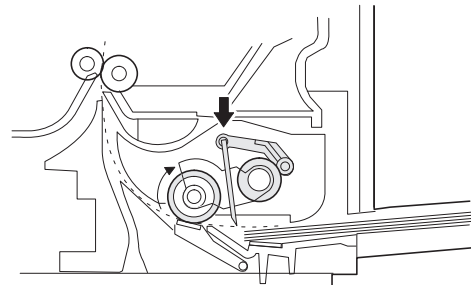
- 2) When the Start key is pressed, the manual paper feed solenoid (MPFS) turns on to disengage the manual paper feed latch. A from the manual paper feed clutch sleeve A, rotating the manual paper feed roller and the manual take-up roller. At the same time, the manual paper feed stopper opens and the manual take-up roller is pressed to the surface of the paper to start paper feeding.



- 3) When pawl C of the manual paper feed clutch sleeve is engaged with the manual feed latch, the manual feed stopper falls and the manual take-up roller rises. At that time, the manual paper feed roller is rotating.



- 4) The lead edge of the transported paper is pressed on the resist roller by the transport roller. Then the paper is stopped temporarily to allow synchronization with the lead edge of the image on the OPC drum.  
From this point, the operation is the same as the paper feed operation from the tray. (Refer to 7-5 - 8.)
- 5) The solenoid turns off to close the gate and return to the initial state.



(3) Conditions of occurrence of paper misfeed

a. When the power is turned on:  
PPD or POD is ON when the power is turned on.

b. Copy operation

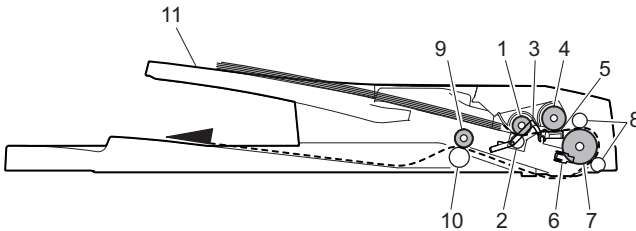
a	PPD1 jam	PPD1 does not turn off within 4 sec after turning on the resist roller.
b	PPD2 jam	PPD2 is off immediately after turning on the resist roller. PPD2 does not turn off within 1.2 sec after turning off the resist roller.
c	POD jam	POD does not turn on within 2.9 sec after turning on the resist roller. POD does not turn off within 1.5 sec - 2.7 sec after turning off PPD2.

6. SPF section (Option)

A. Outline

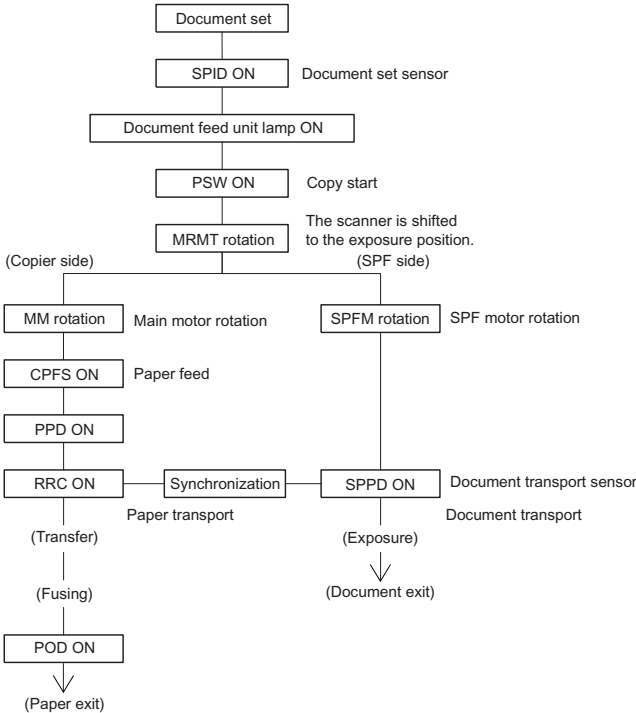
It automatically copies up to 50 sheets of documents of a same size. (Only one set of copies)

B. Document transport path and basic composition



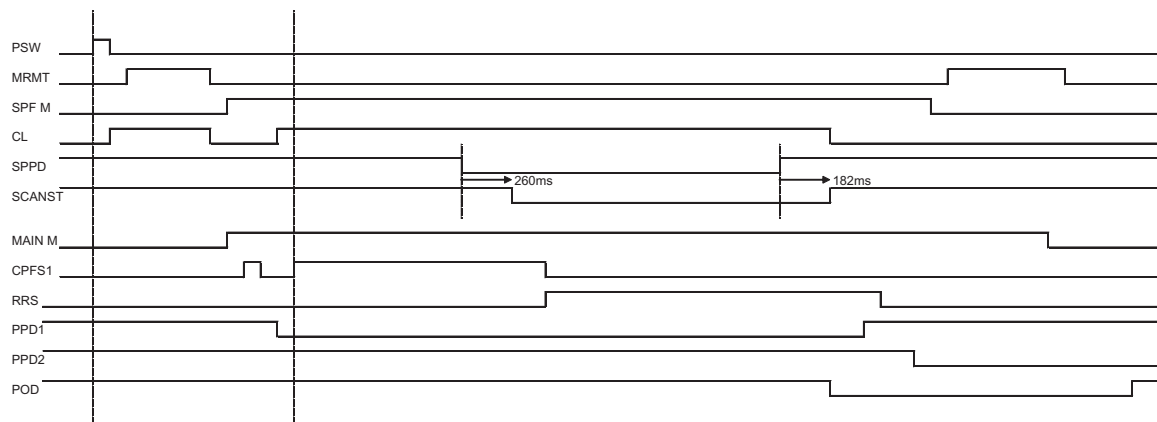
1	Pickup roller	2	Sheet of document for paper feed
3	Set detection ACT	4	Document feed roller
5	Separation sheet	6	Paper entry sensor
7	PS roller D	8	Transport follower roller
9	Paper exit roller	10	Paper exit follower roller
11	Document tray		

C. Operational descriptions



In the zooming mode, the magnification ratio in the sub scanning direction (paper transport direction) is adjusted by changing the document transport speed.

## Time chart

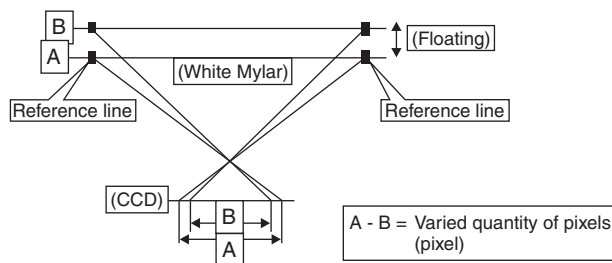


### SPF JAM generation condition

- 1) When SPPD is ON (document remaining) in initializing
- 2) When SPPD is not turned ON within about 1.5 sec (at 100% copy) after starting the document feed operation.
- 3) When SPPD is not turned OFF within about 4.7 sec (at 100% copy) after turning on SPPD.
- 4) When the OC cover is opened during document transport (during SPF motor rotation) (The SPF motor is stopped during document transport, but the OC cover open error occurs instead of the SPF JAM.)

### D. SPF open/close detection (book document detection)

SPF open/close detection (book document) detection is performed by detecting the interval between the reference lines on the white Mylar attached to the paper exit guide (document scanning section) by the scanner (CCD) and detecting the varied quantity.



Note: When replacing the carriage unit, be sure to execute SIM41-06.

If SIM41-06 is not executed, the carriage unit may not read the reference line on the white Mylar, preventing the document from being fed.



## [8] DISASSEMBLY AND ASSEMBLY

Before disassembly, be sure to disconnect the power cord for safety.

1. Do not disconnect or connect the connector and the harness while the machine is powered. Especially be careful not to disconnect or connect the harness between the MCU PWB and the LSU (MCU PWB: CN5) during the machine is powered. (If it is disconnected or connected during the machine is powered, the IC inside the LSU will be destroyed.)
2. To disconnect the harness after turning on the power, be sure to turn off the power and wait for at least 10 sec before disconnection. (Note that a voltage still remains immediately after turning off the power.)

The disassembly and assembly procedures are described for the following sections:

1. High voltage section
2. Operation panel section
3. Optical section
4. Fusing section
5. Tray paper feed/transport section
6. Manual paper feed section
7. Rear frame section
8. Power section
9. Reverse roller section
10. SPF section (Option)

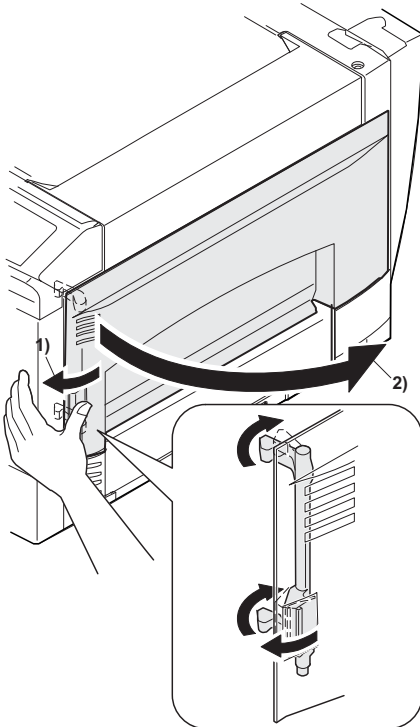
### 1. High voltage section

#### A. List

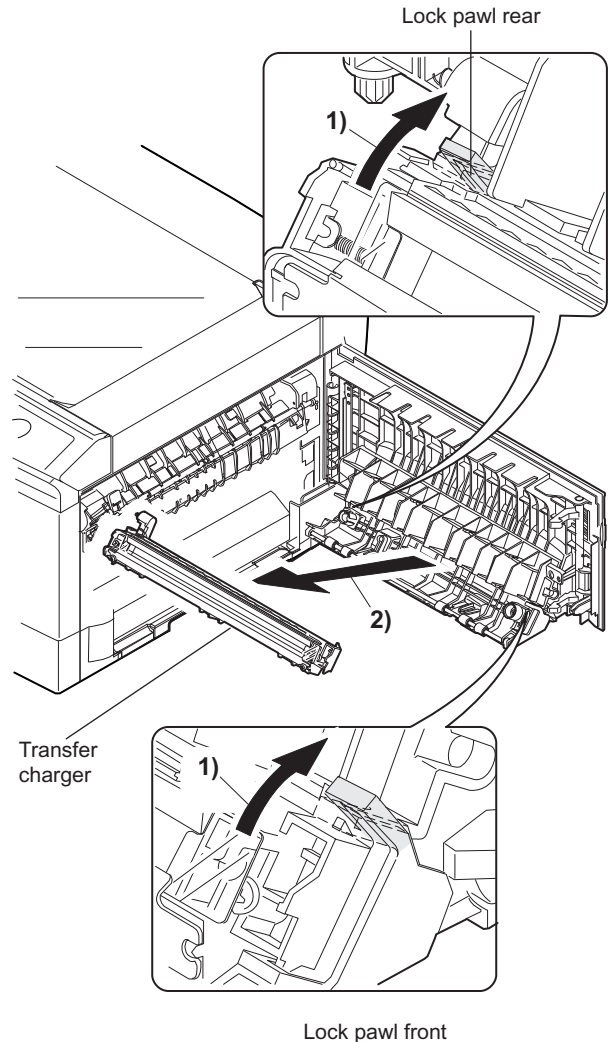
No.	Part name Ref.
1	Transfer charger unit
2	Charger wire

#### B. Disassembly procedure

- 1) Press the side cover open/close button and open the side cover.



- 2) Push up the lock pawls (2 positions) of the side cover, and remove the transfer charger.

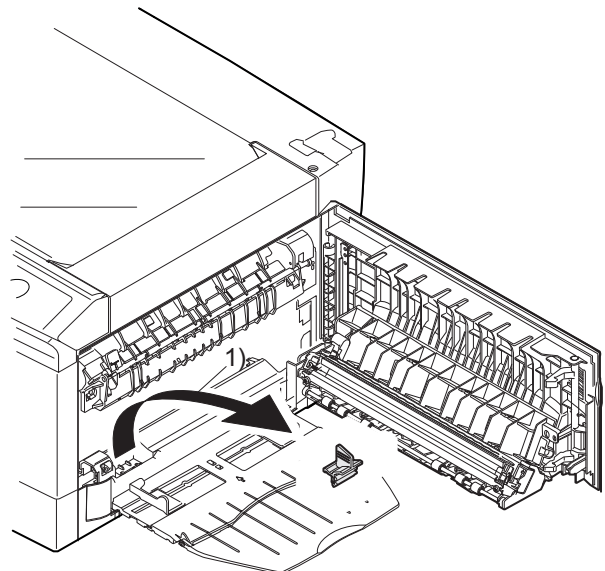


#### C. Assembly procedure

For assembly, reverse the disassembly procedure.

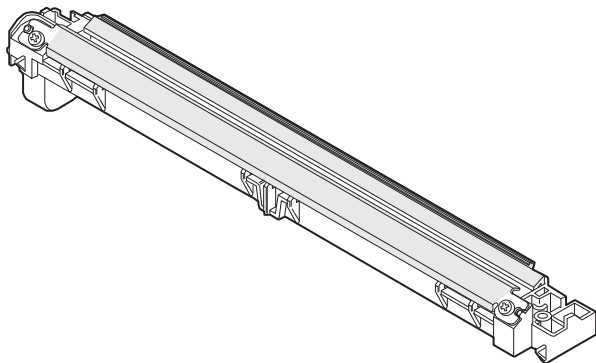
#### D. Charger wire cleaning

- 1) Remove the charger cleaner from the manual paper feed unit.

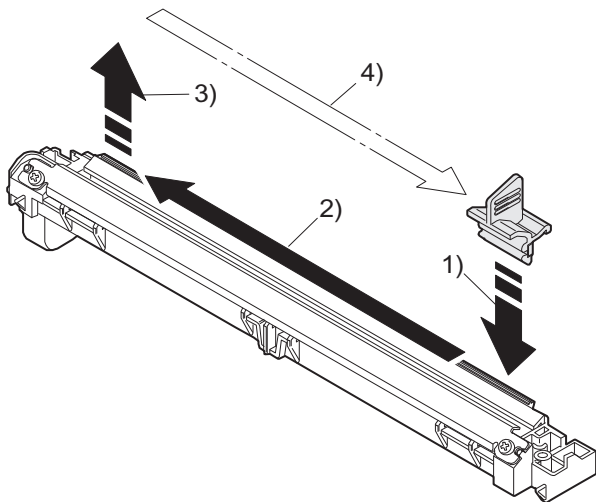




- 2) Clean the TC front guide and the TC holder with alcohol.



- 3) Set the charger cleaner to the transfer unit, and move it reciprocally a few times in the direction of the arrow shown in the figure below.



## E. Charger wire replacement

- 1) Remove the TC cover and remove the screw.
- 2) Remove the spring and remove the charger wire.
- 3) Install a new charger wire by reversing the procedures (1) and (2).

At that time, be careful of the following items.

- The rest of the charger wire must be within 1.5mm. Refer to Fig.1
- The spring hook section (charger wire winding section) must be in the range of the projection section.
- Be careful not to twist the charger wire.

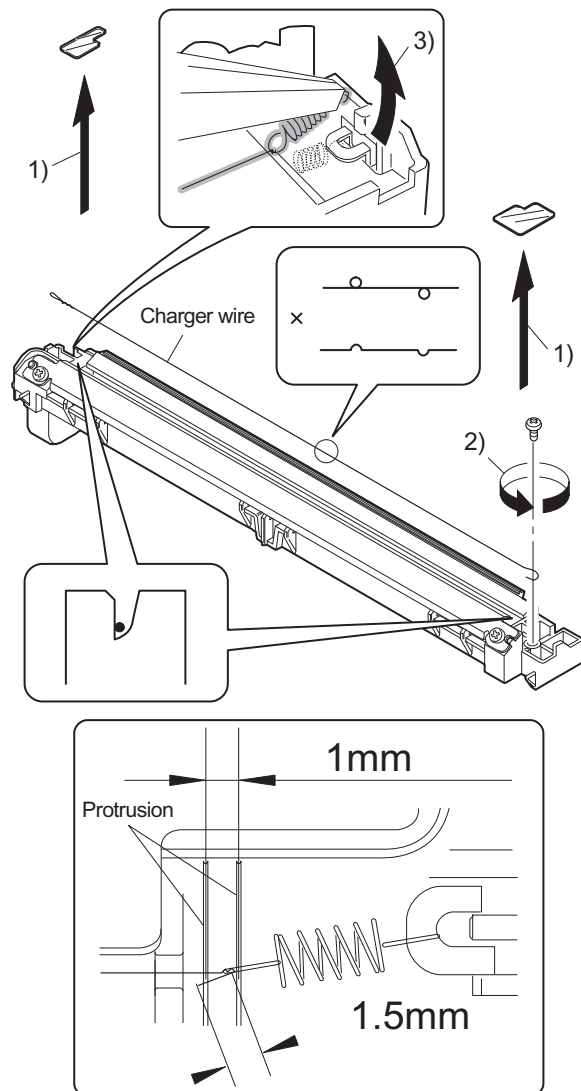


Fig.1

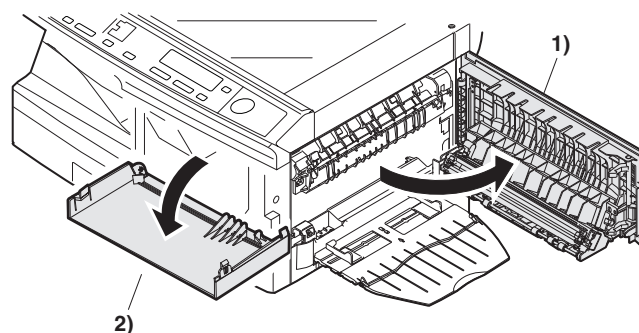
## 2. Operation panel section

### A. List

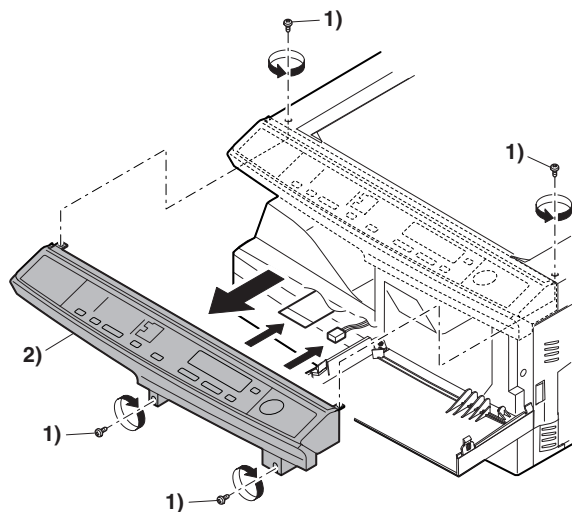
No.	Part name	Ref.
1	Operation panel unit	
2	Operation PWB	

### B. Disassembly procedure

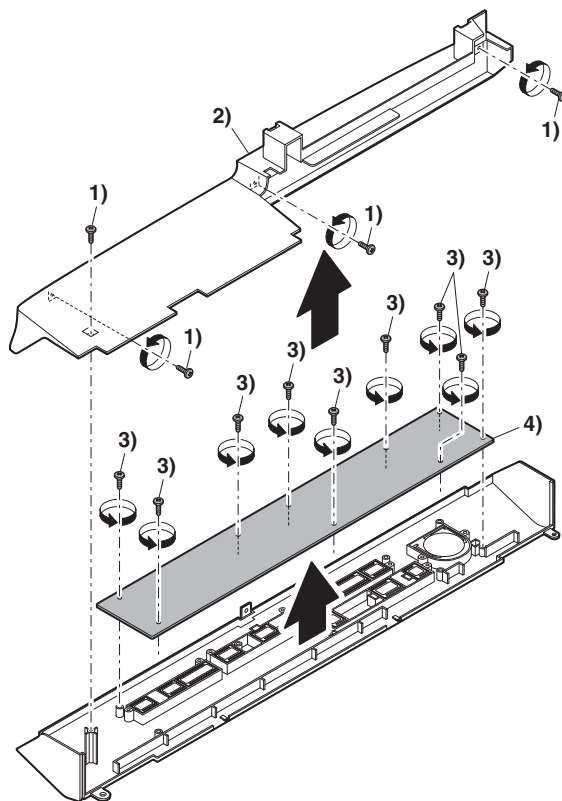
- 1) Open the side door, and Open the front cover.



- 2) Remove the screws (4 pcs.), the harness, and the operation panel unit.



- 3) Remove four screws, and remove the operation cabinet.
- 4) Remove nine screws, and remove the operation PWB.



### C. Assembly procedure

For assembly, reverse the disassembly procedure

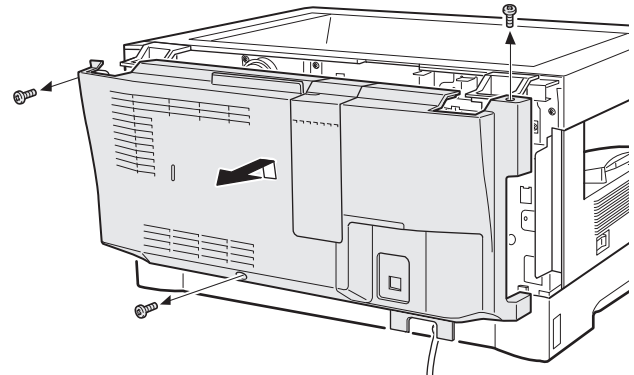
## 3. Optical section

### A. List

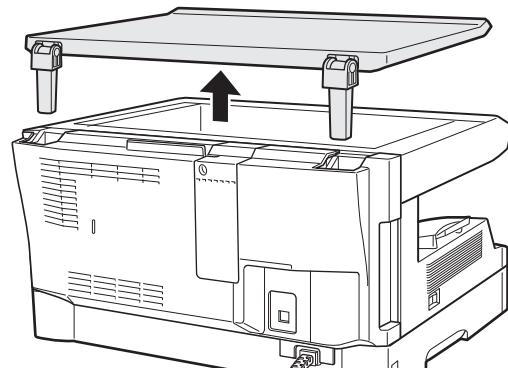
NO.	Part name	Ref.
1	Copy lamp unit	
2	Copy lamp	
3	Lens unit	

### B. Disassembly procedure

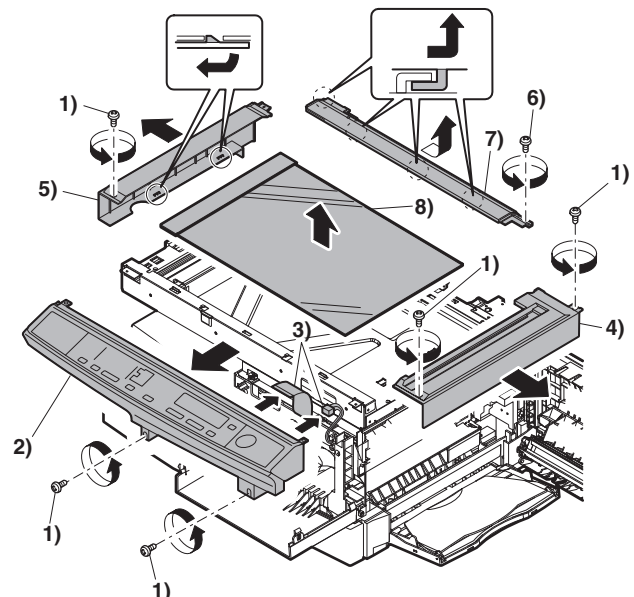
- 1) Remove three screws, and remove the rear cabinet.



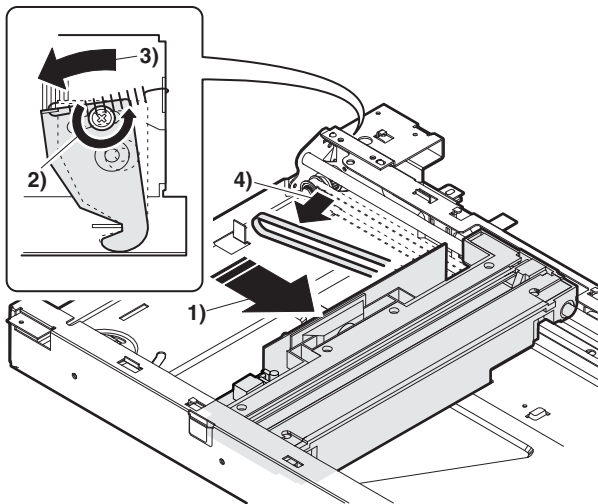
- 4) Remove the original cover.



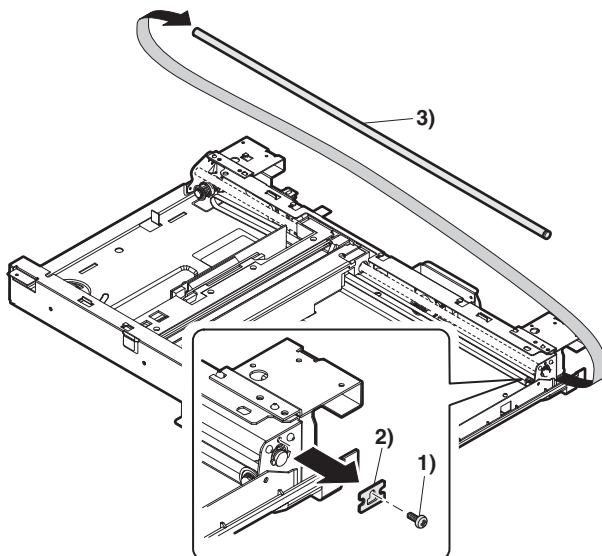
- 5) Remove five screws. Remove the operation unit, and disconnect the connector.
- 6) Remove the right cabinet.
- 7) Remove the left cabinet.
- 8) Remove the screw, and remove the rear cover.
- 9) Remove the table glass.



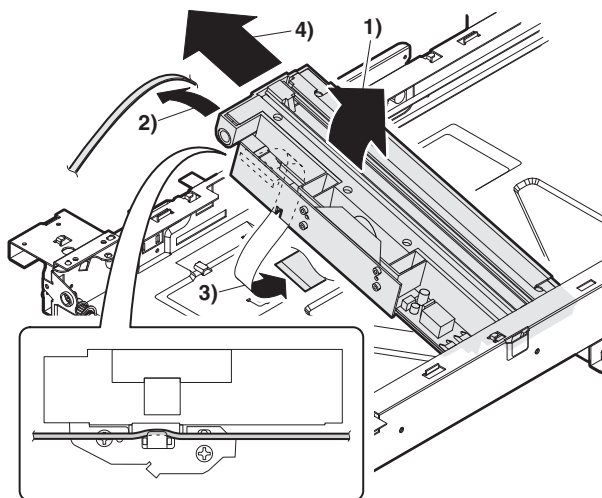
- 10) Move the carriage to the position indicated on the figure.
- 11) Loosen the screw which is fixing the tension plate.
- 12) Move the tension plate in the arrow direction to release the tension, and remove the belt.



- 13) Remove the screw, and remove the rod stopper.
- 14) Remove the rod.



- 15) Lift the rear side of the carriage, remove the belt and the connector, and remove the carriage.

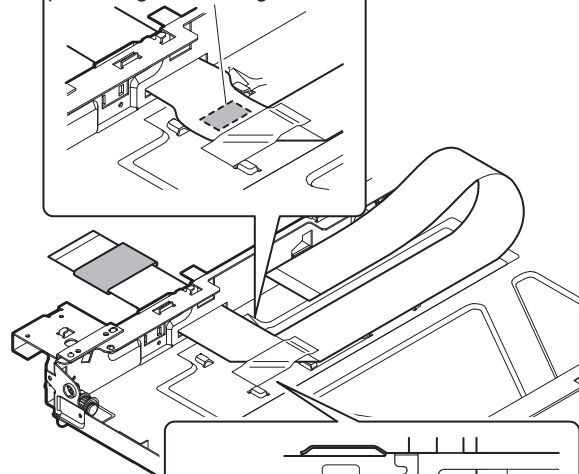


## C. Assembly procedure

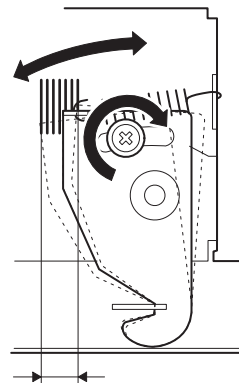
### CCD core

- 1) Insert the CCD-MCU harness into the CCD PWB of the carriage unit.
- 2) Attach the CCD-MCU harness to the duplex tape on the back surface of the carriage unit. Clean and remove oil and dirt from the attachment surface.
- 3) Pass the CCD-MCU harness through the square hole in the base plate.
- 4) Attach the CCD-MCU harness to the base plate with duplex tape.
- 5) Attach two cable fixing sheets to fix the CCD-MCU harness to the base plate.
- 6) Pass the core through the CCD-MCU harness and fix the core.
- 7) Insert the CCD-MCU harness into the MCU PWB.

Note: Attach the FFC to the base plate securely with duplex tape to prevent against coming loose.



Note: Attach the FFC to fit with the marking line. Marking line.



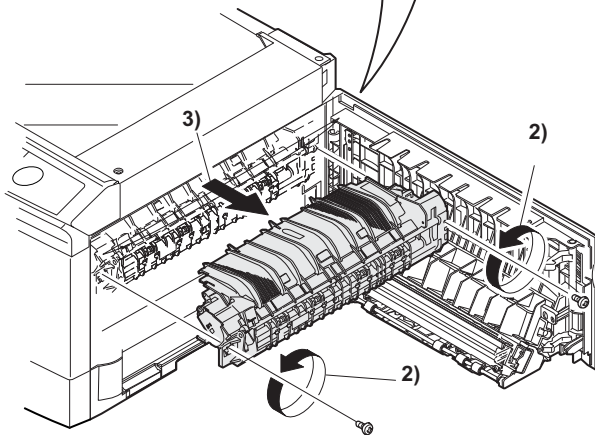
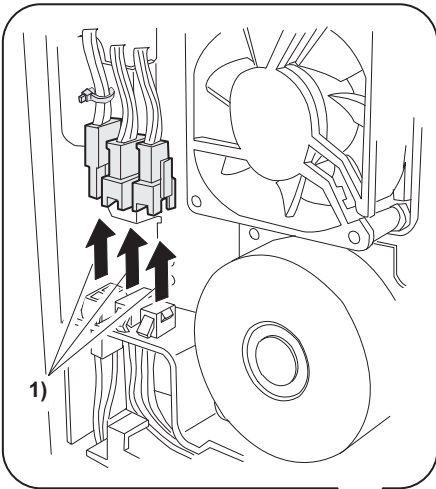
## 4. Fusing section

### A. List

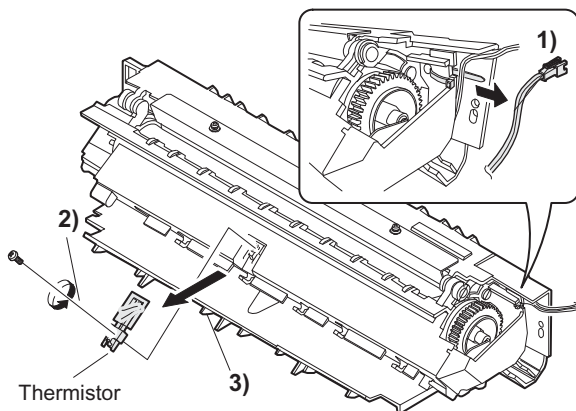
No.	Part name	Ref.
1	Thermistor	
2	PPD2 sensor	
3	Heater lamp	
4	Pressure roller	
5	Heat roller	

### B. Disassembly procedure

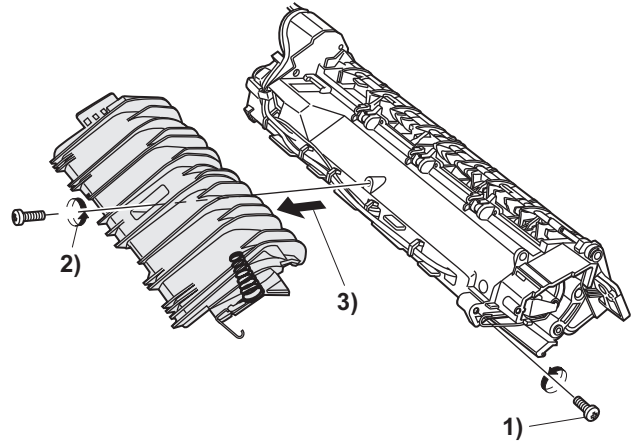
- 1) Remove the connectors (3 pcs.) of the rear cabinet.
- 2) Open the side cover, remove two screws, and remove the fusing unit.



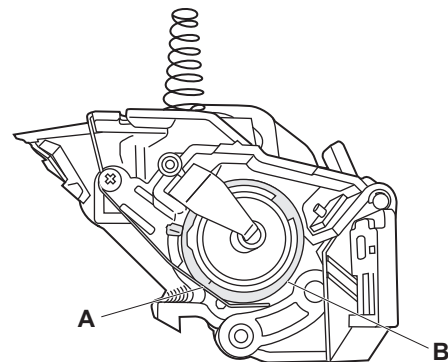
- 3) Cut the binding band, remove the screw, and remove the thermistor.



- 4) Remove the screw and remove the resistor. Remove the screw and remove the U-turn guide.

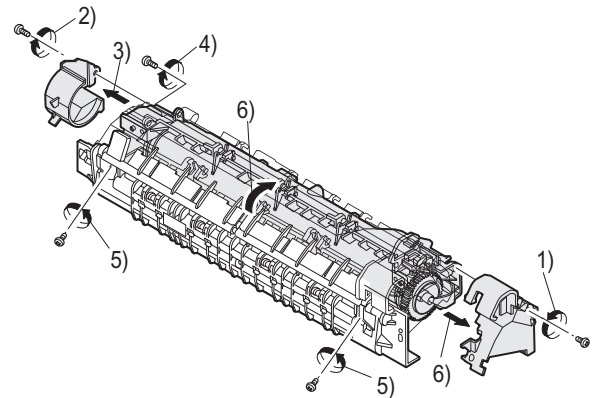


Note: Check to confirm that the fusing lower earth spring (A) does not extend over the fusing bearing (B) after tightening the screw.



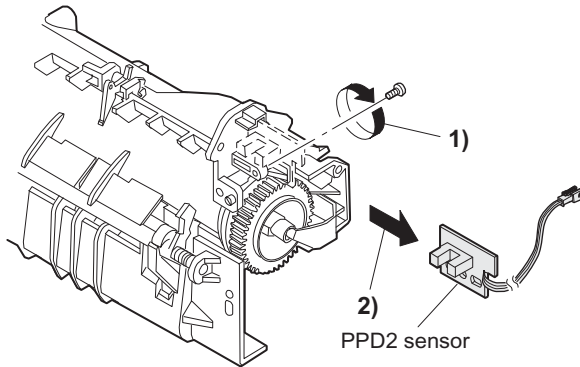
### Pressure roller section disassembly

- 5) Remove the three screws, remove the fusing cover lower on the right side, and open the heat roller section.

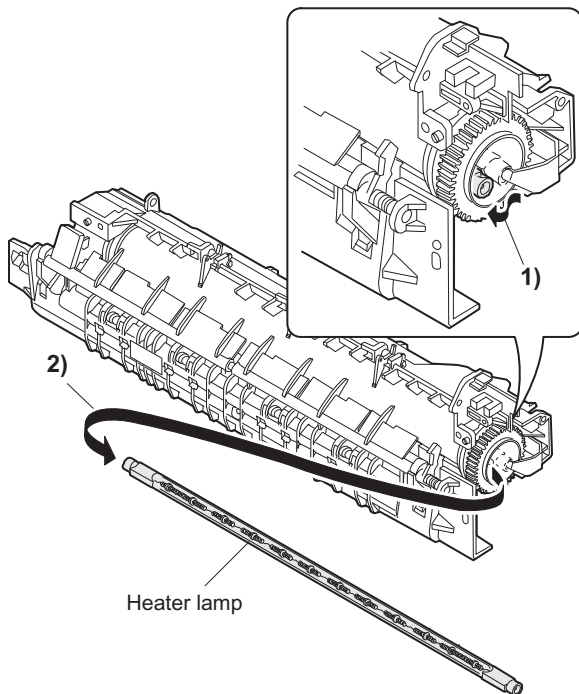




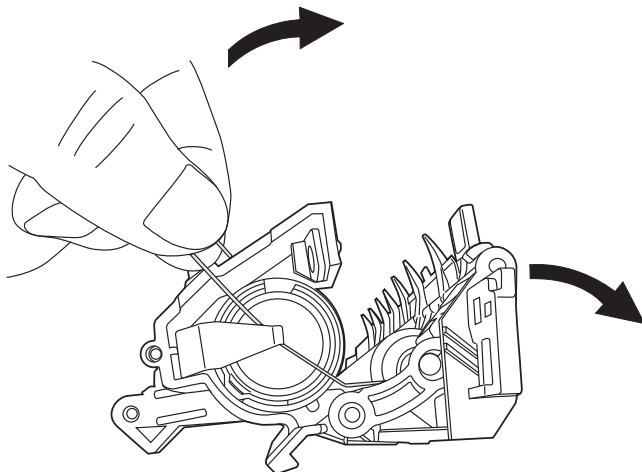
- 6) Remove the screw and remove the PPD2 sensor.



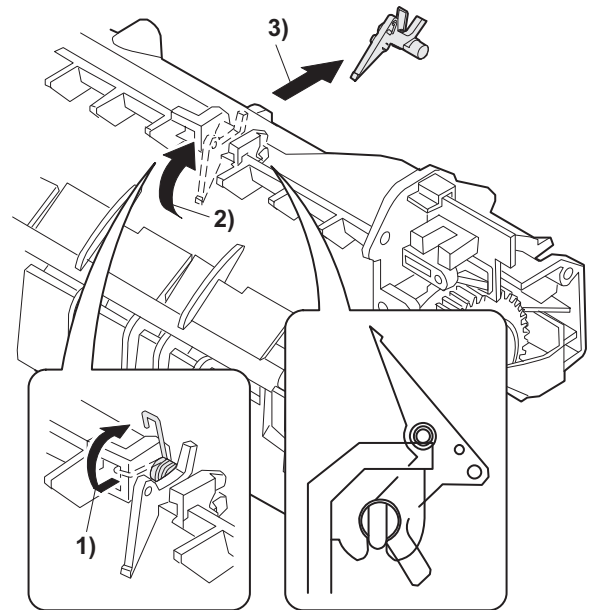
- 7) Remove the plate spring on the right and remove the heater lamp.



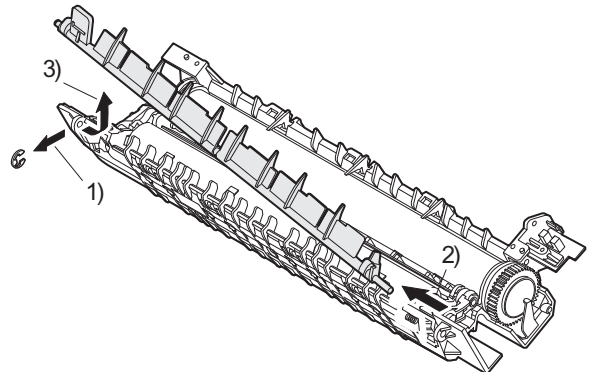
- 8) When opening the fusing unit, slide the fusing lower earth spring in the arrow direction, and open the unit.  
If the fusing unit is opened without sliding the fusing lower earth spring, the fusing lower earth spring is deformed.  
If the fusing lower earth spring is once deformed, the earth function may not work properly. Replace the deformed spring with a new one.



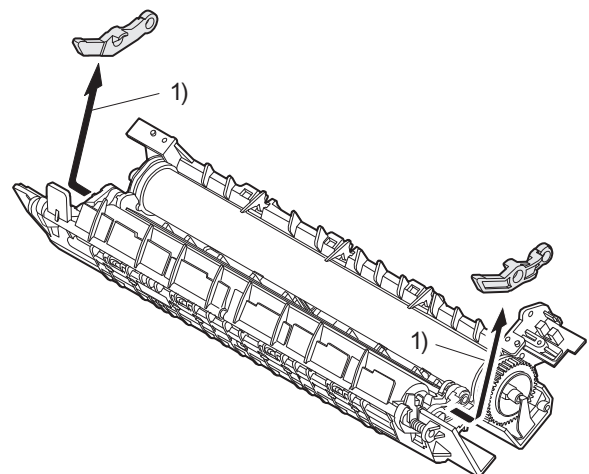
- 9) Remove the spring, and remove the upper separation pawls (3 pcs.).



- 10) Remove the E-ring and remove the reverse gate.



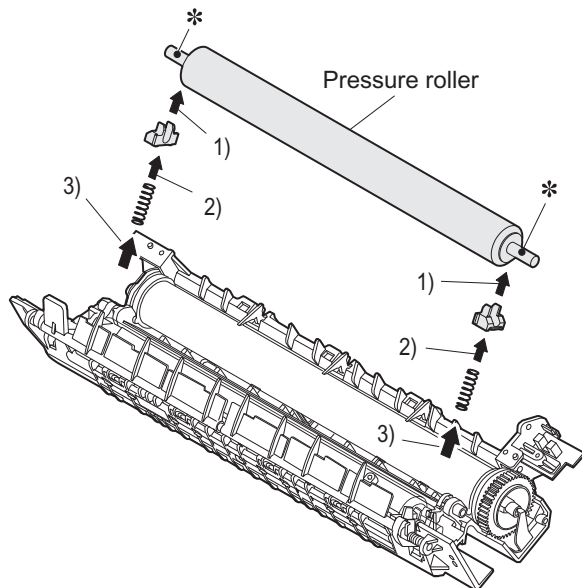
- 11) Remove the pressure release levers on the right and the left sides.



12) Remove the pressure roller, and the spring.

Note: Apply grease to the sections specified with an asterisk (\*).

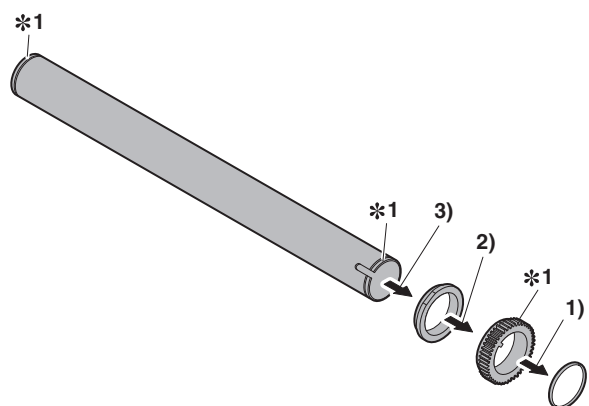
Grease: "JFE552" UKOG-0235FCZZ



7) Remove the parts from the heat roller.

Note: Apply grease to the sections specified with \*1.

Grease: "JFE552" UKOG-0235FCZZ



8) Remove two screws and remove the thermo unit.

Note: The set temperature of the thermostat differs from that of the current model.

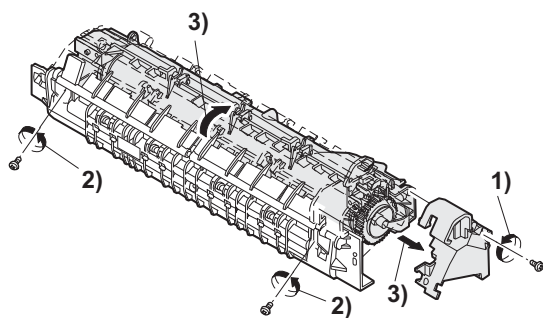
	Temperature
MX-B200	230°C

### Heat roller disassembly

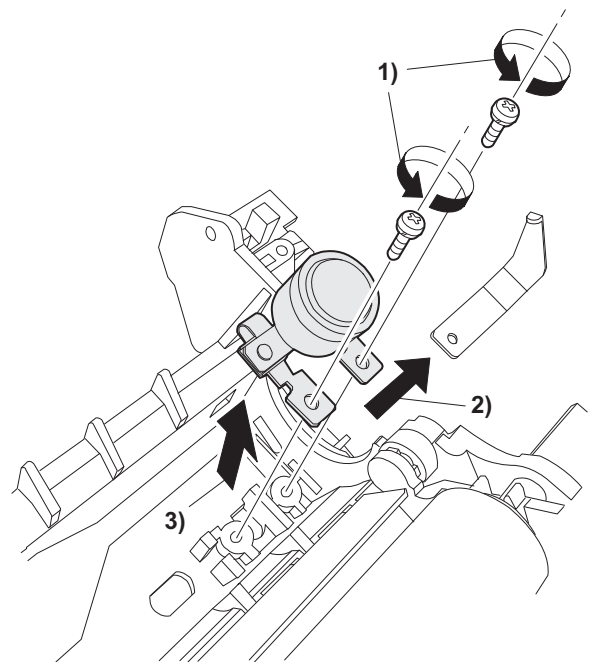
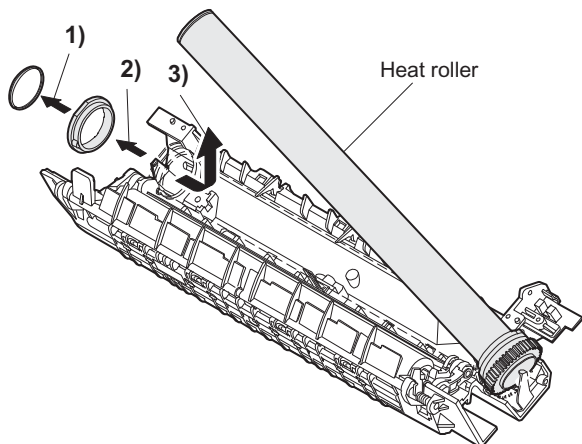
(Continued from procedure 4.)

5) Remove screws, remove the fusing cover, and open the heat roller section.

Note: When opening the fusing unit, be careful not to deform the fusing lower earth spring as described in the item 8) of "Pressure roller section disassembly.



6) Remove the C-ring and the fusing bearing, and remove the heat roller.



### C. Assembly procedure

For assembly, reverse the disassembly procedure.

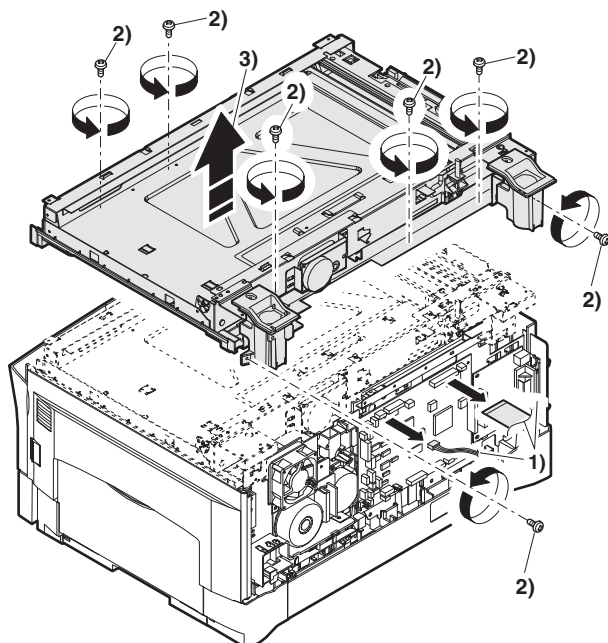
## 5. Tray paper feed/transport section

### A. List

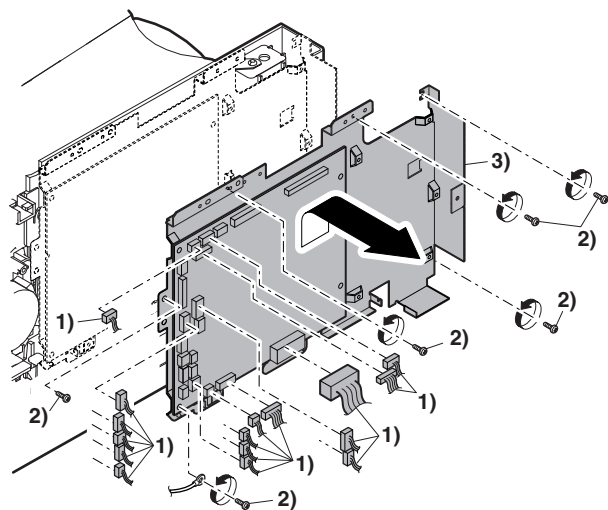
No.	Part name Ref.
1	PPD1 sensor PWB
2	POD sensor PWB
3	LSU unit
4	Intermediate frame unit
5	Paper feed roller

### B. Disassembly procedure

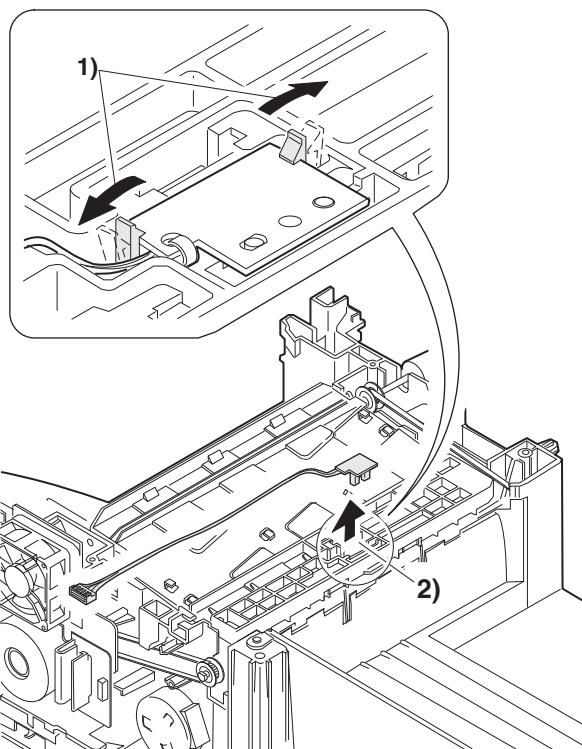
- 1) Remove two screws, and remove the hinge guide R.
- 2) Disconnect the connector. (2 positions)
- 3) Remove five screws, and remove the scanner unit.
- 4) Remove the fan duct.



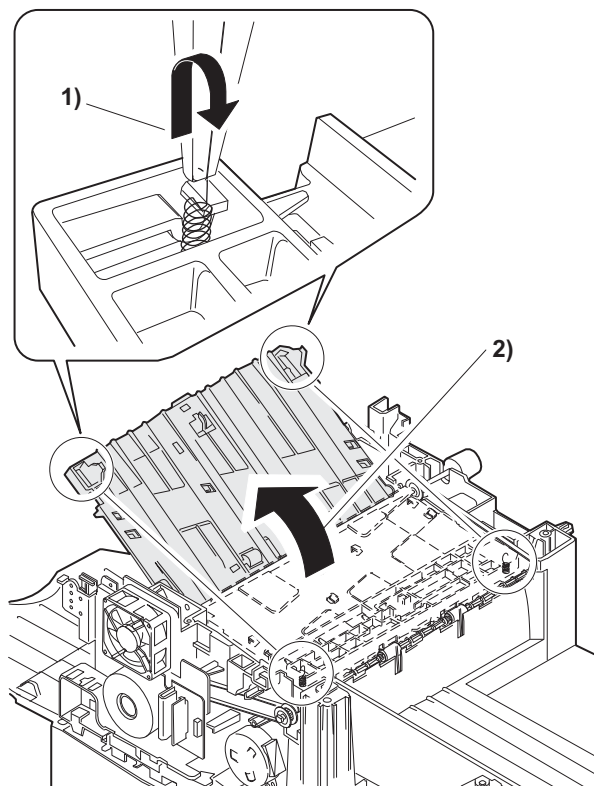
- 5) Remove each connector and six screws, and remove the MCU PWB. (The shape of the MCU PWB differs depending on the model.)



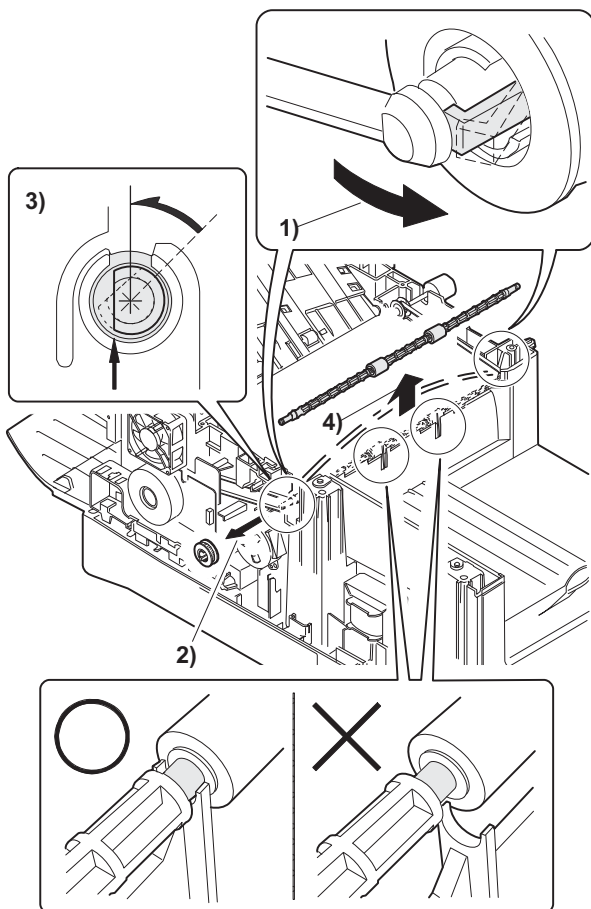
- 6) Remove the PWB insulation mylar and remove the paper transport detection sensor (POD).



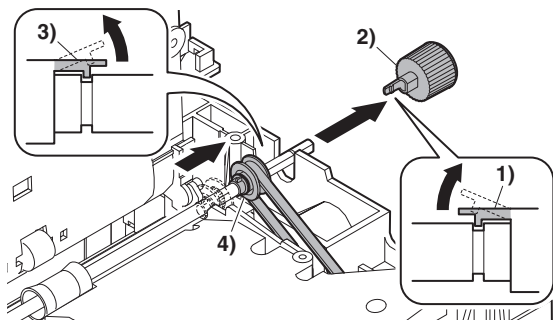
- 7) Remove two springs and open the intermediate frame unit.



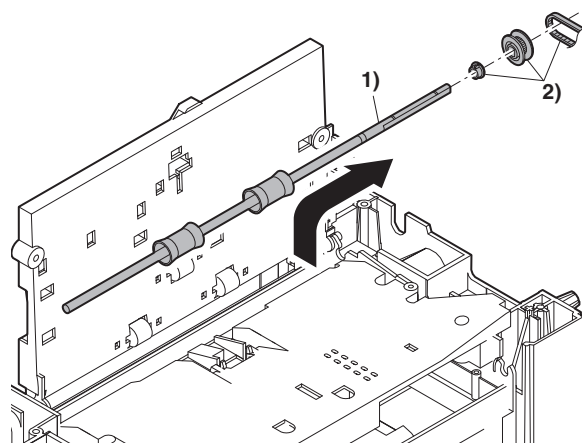
- 8) Remove the pulleys on the both sides and remove the paper exit roller.



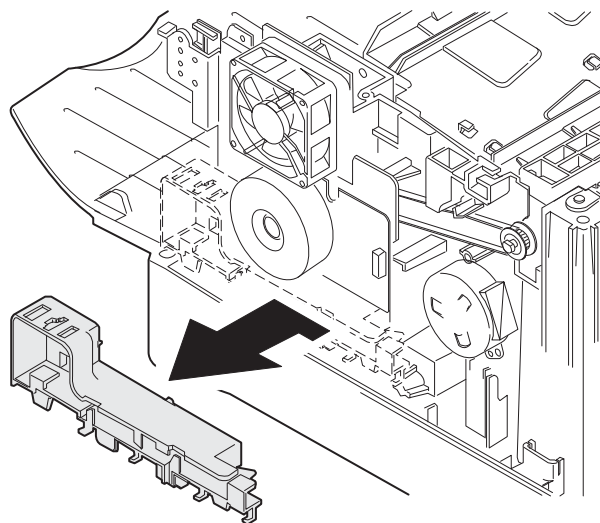
- 9) Disengage the pawl, and remove the roller knob.  
10) Disengage the pawl, and shift the pulley and the bearing.



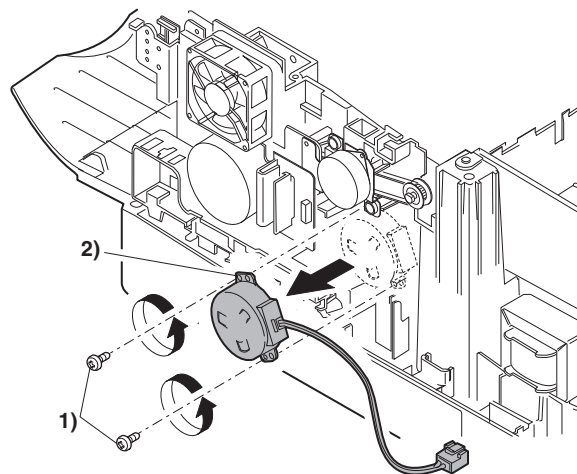
- 11) Remove the paper exit roller, and remove the belt, the pulley, and the bearing.



- 12) Remove the harness guide.

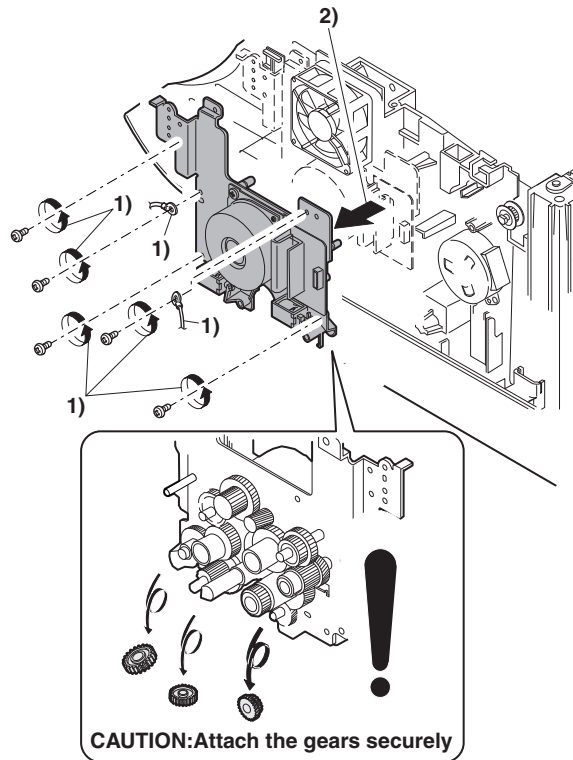


- 13) Remove two screws and remove the toner motor.

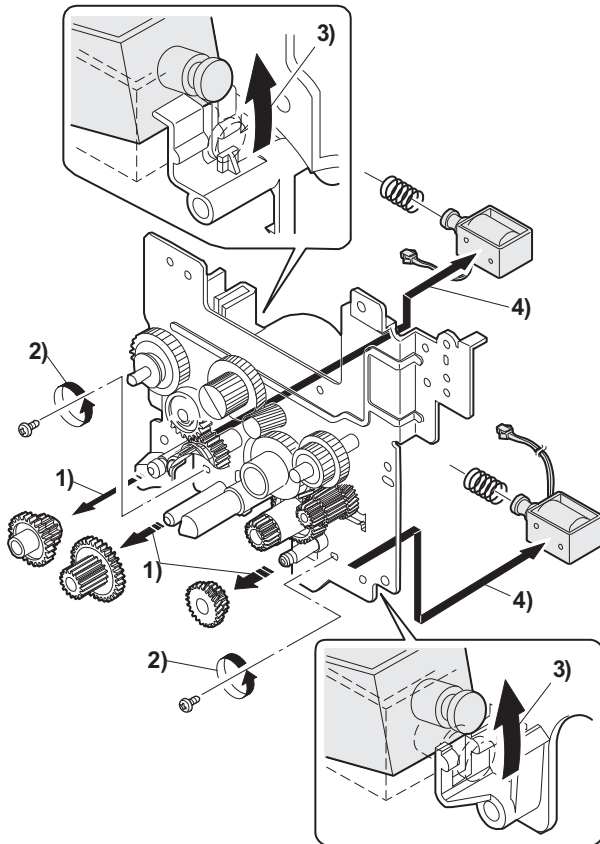




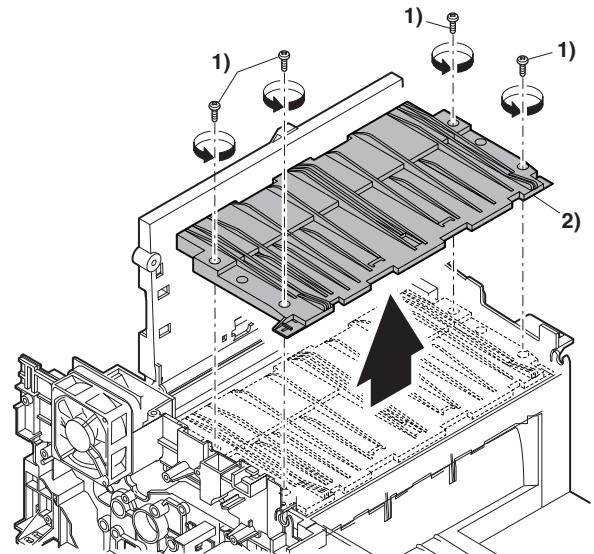
- 14) Remove five screws and the grounding wire, and remove the main drive unit.



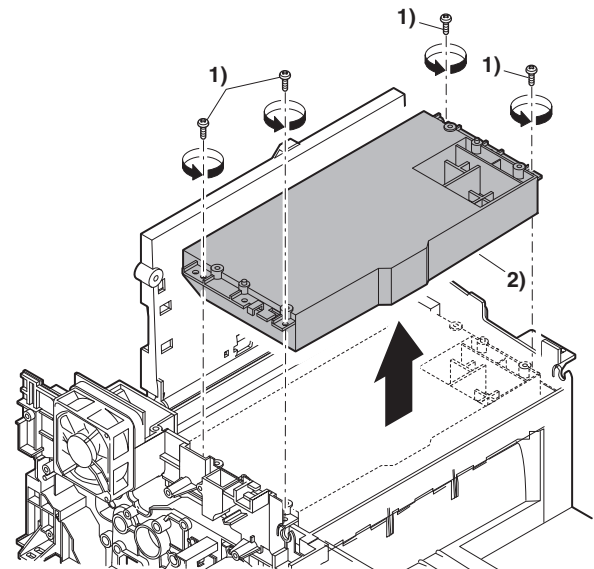
- 15) Remove the parts as shown below, and remove the pressure release solenoid and the paper feed solenoid.



- 16) Remove four screws, and remove the paper guide unit.



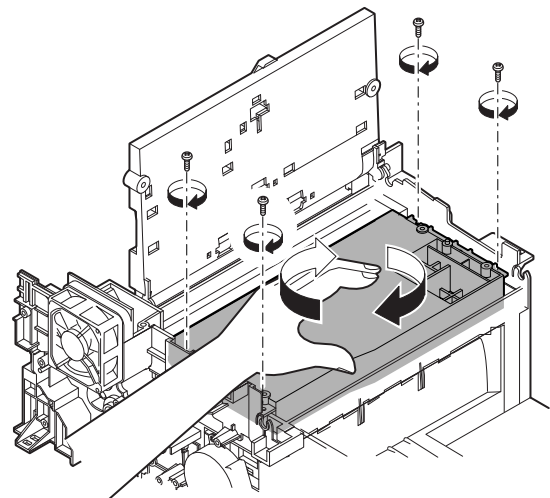
- 17) Remove four screws, and remove the LSU unit.



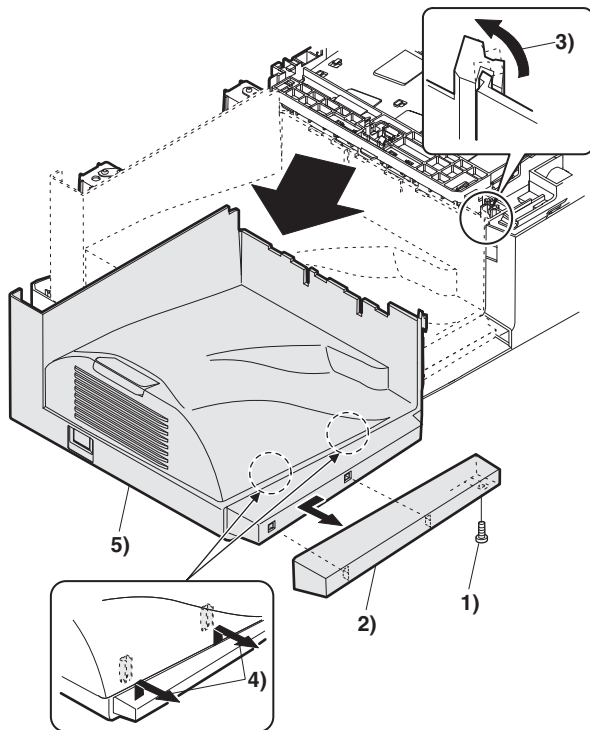
**[Note for assembling the LSU]**

When installing the LSU, turn the LSU clockwise and fix with screws in order to provide an attachment backlash in the proper direction.

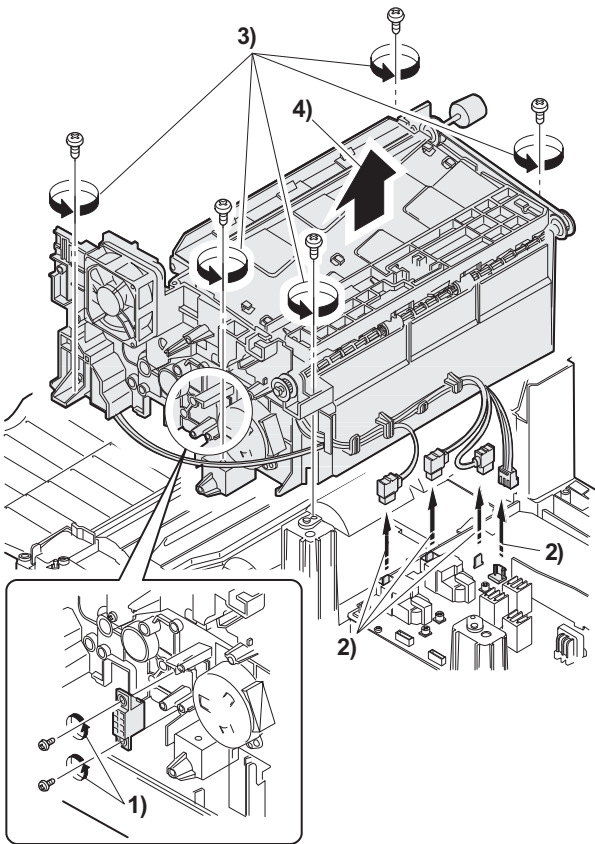
Observe the following sequence of fixing screws.



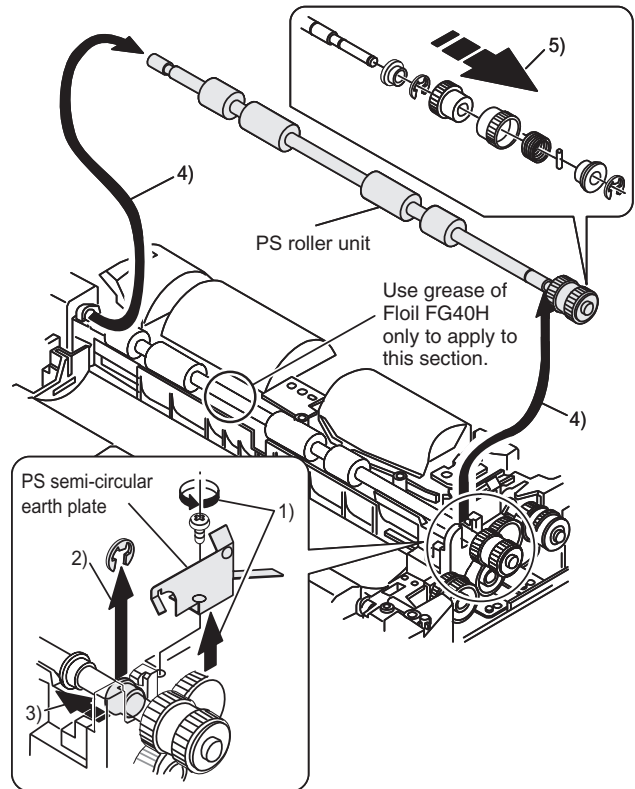
- 18) Remove the screw, slide the left cabinet to the left to detach it.  
Remove each pawl, and remove the paper exit tray.



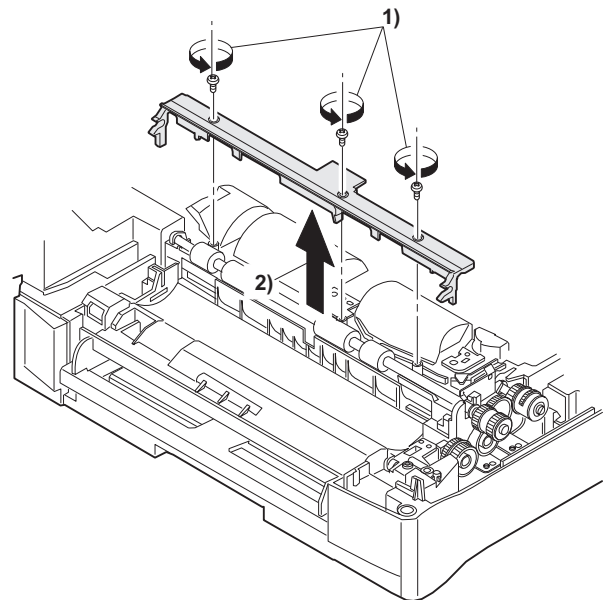
- 19) Remove two screws and remove the fusing connector.  
20) Remove five screws and the connector, and lift the intermediate frame unit to remove.



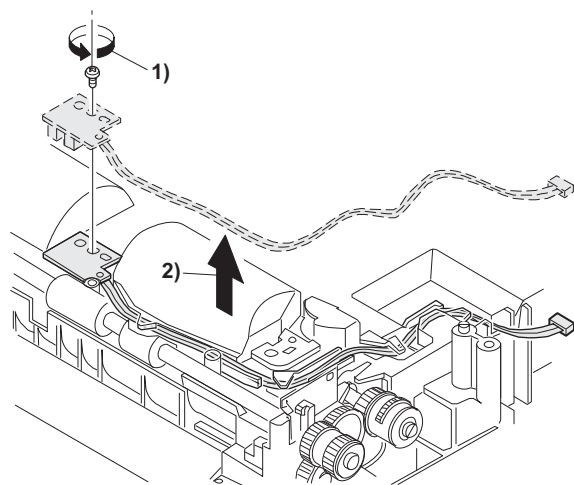
- 21) Remove the screw and the E-ring, and remove the PS semi-circular earth plate and the PS roller unit.  
22) Remove the E-ring and remove the spring clutch from the PS roller unit.



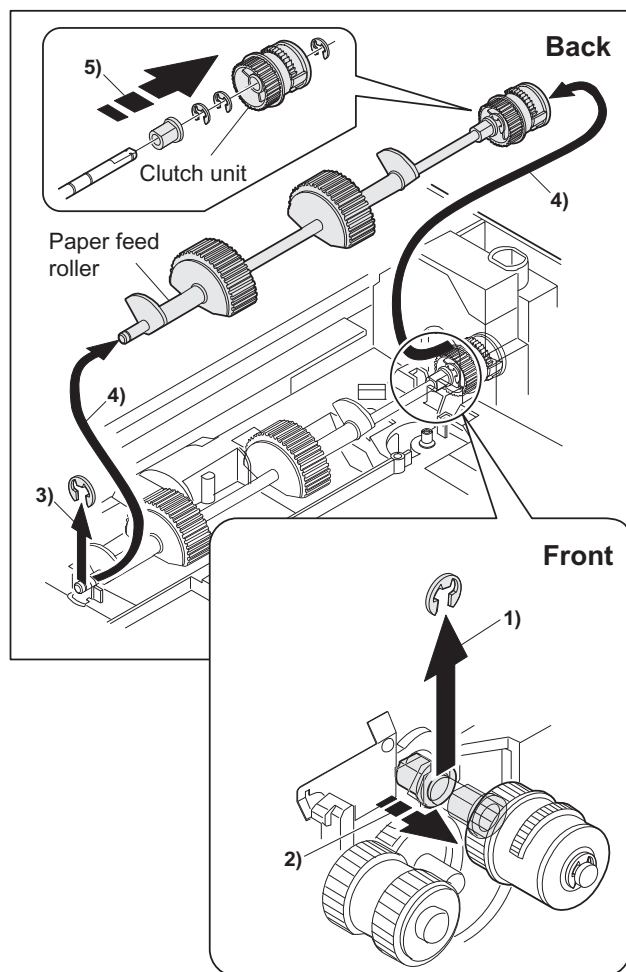
- 23) Remove three screws and remove the TC front paper guide.



- 24) Remove the screw and the connector, and remove the PPD1 sensor PWB.



- 25) Remove two E-rings and remove the paper feed roller.  
26) Remove three E-rings and remove the clutch unit.



### C. Assembly procedure

For assembly, reverse the disassembly procedure.

## 6. Manual paper feed section

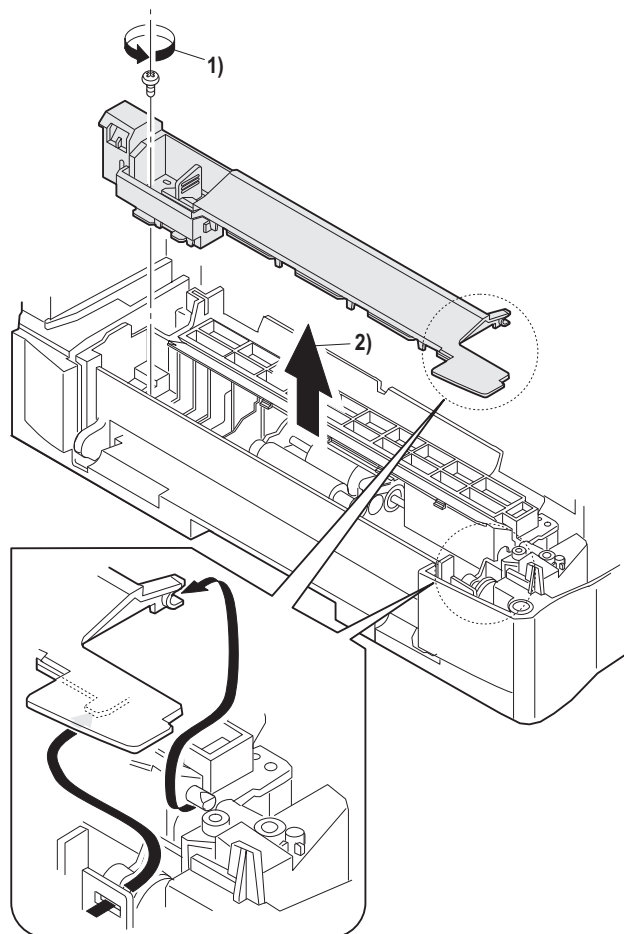
### A. List

No.	Part name	Ref.
1	Manual transport roller	
2	Cassette detection switch	
3	Side door detection unit	

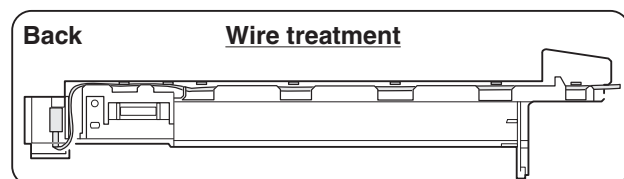
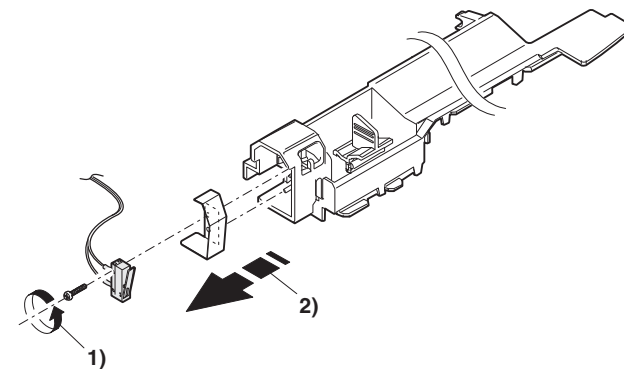
### B. Disassembly procedure

#### Multi unit

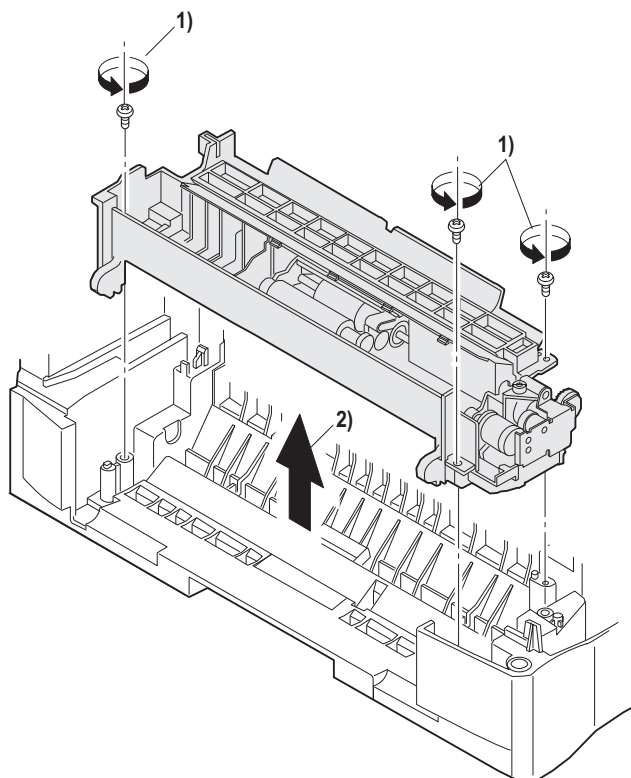
- 1) Remove the screw and remove the multi upper cover.



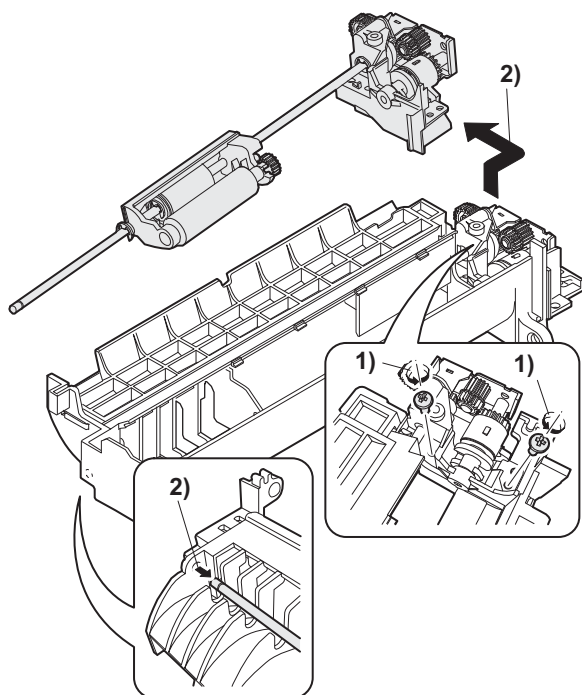
- 2) Remove the screw and remove the side door detection unit.



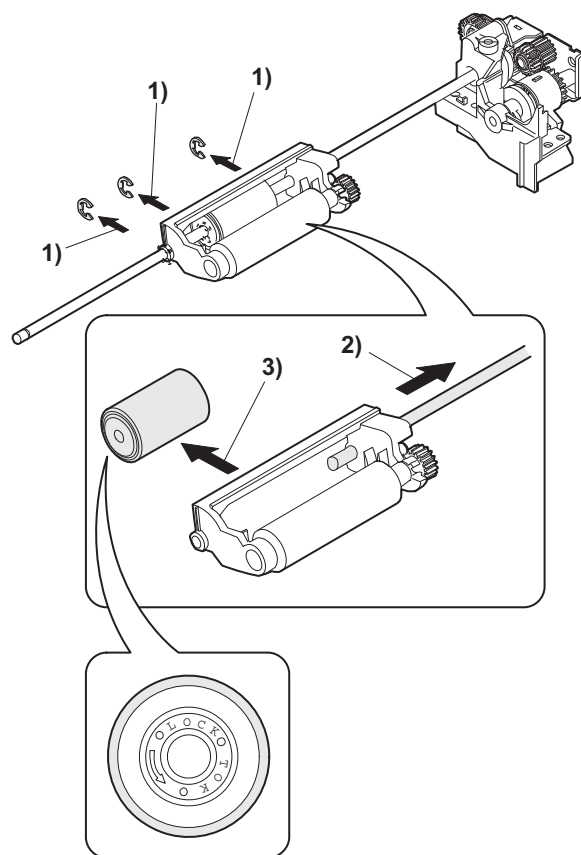
- 3) Remove three screws and remove the multi paper feed upper frame.



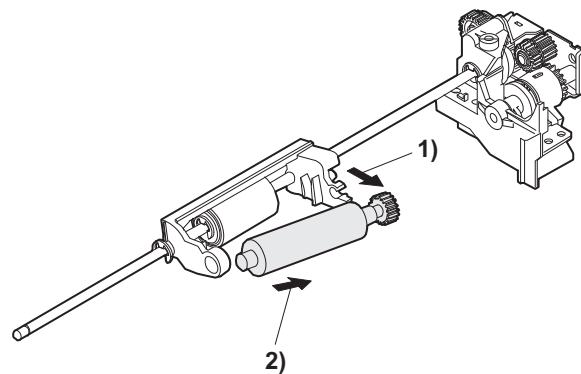
- 4) Remove two screws and remove the multi feed bracket unit from the multi paper feed upper frame.



- 5) Remove three E-rings and remove the manual paper feed roller B9.

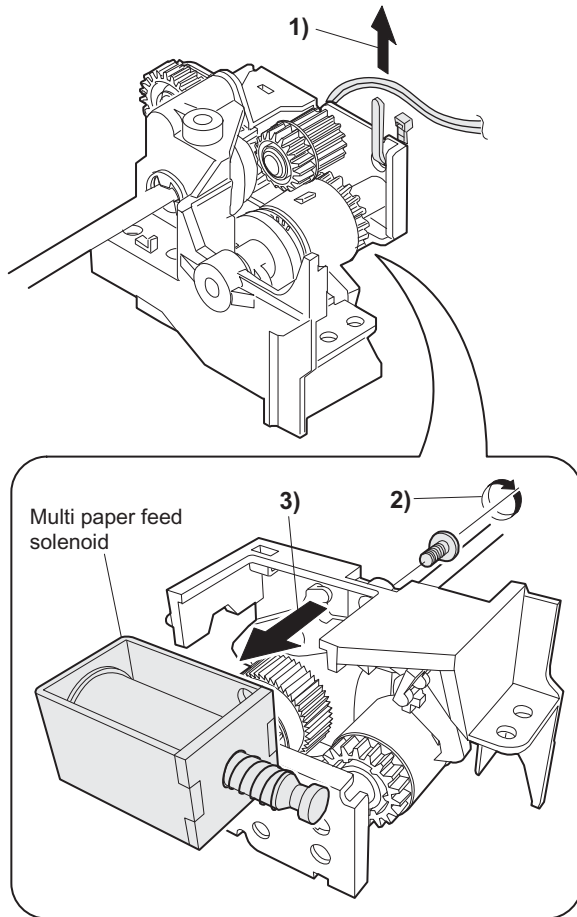


- 6) Remove the pick-up roller.





- 7) Cut the binding band and remove the multi paper feed solenoid.

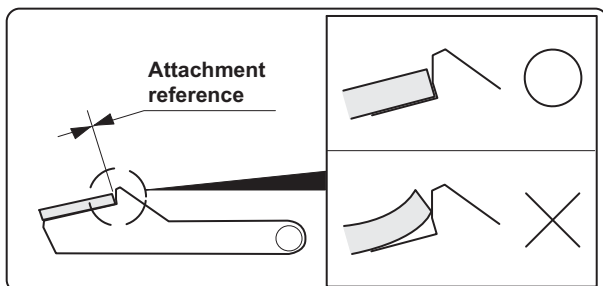
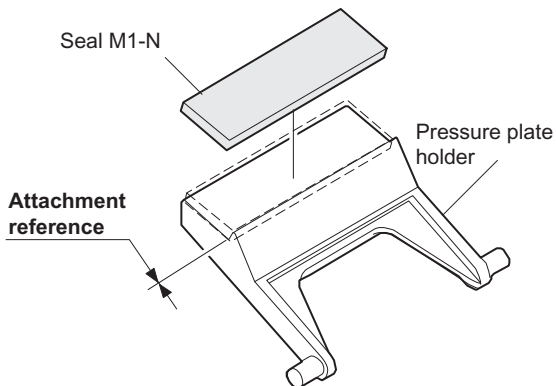


### C. Assembly procedure

For assembly, reverse the disassembly procedure.

### D. Pressure plate holder attachment

- 1) Attach the pressure plate holder so that the resin section is not covered with the seal M1-N.



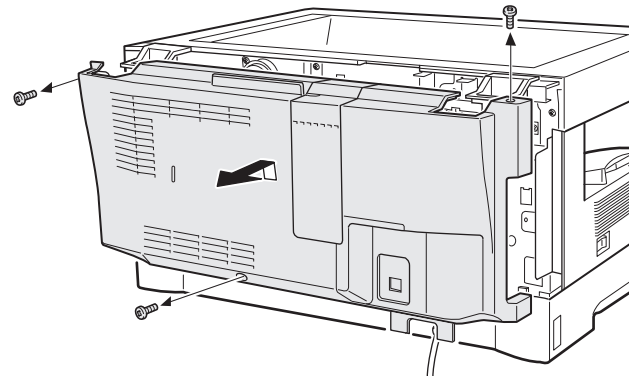
## 7. Rear frame section

### A. List

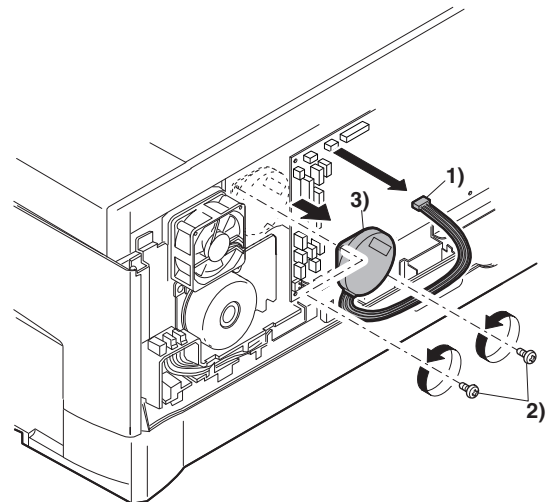
No.	Part name	Ref.
1	Scanner motor	
2	Main motor	
3	Exhaust fan motor	
4	Main PWB	

### B. Disassembly procedure

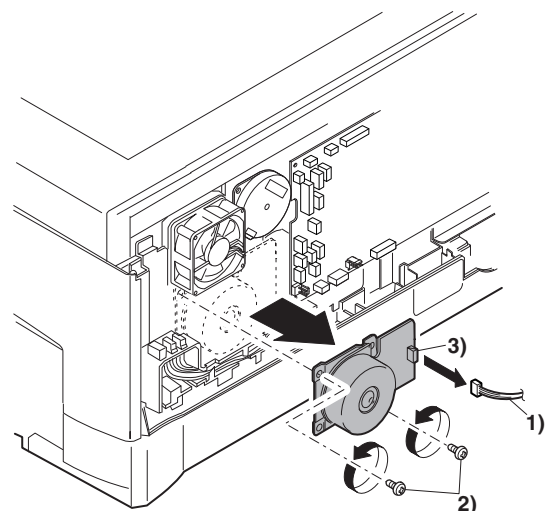
- 1) Remove three screws, and remove the rear cabinet.



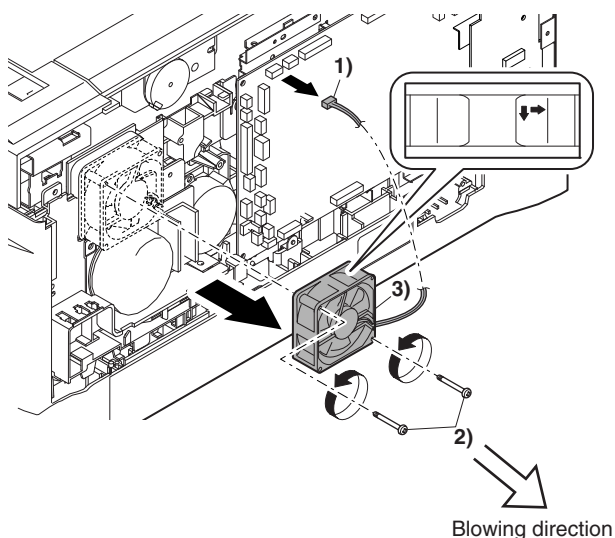
- 2) Disconnect the connector.  
3) Remove two screws, and remove the scanner motor.



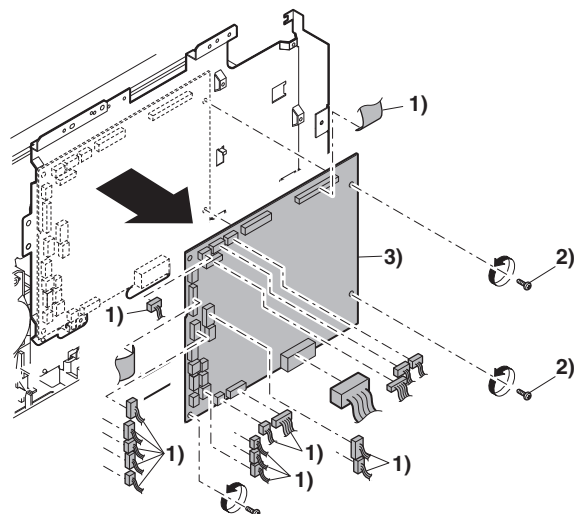
- 4) Remove two screws and one harness, and remove the main motor.



- 5) Remove two screws and one connector, and remove the exhaust fan motor.



- 6) Disconnect the connectors.
- 7) Remove the five screws, and remove the MCU PWB. (The shape of the MCU PWB differs depending on the model.)



### C. Assembly procedure

For assembly, reverse the disassembly procedure.

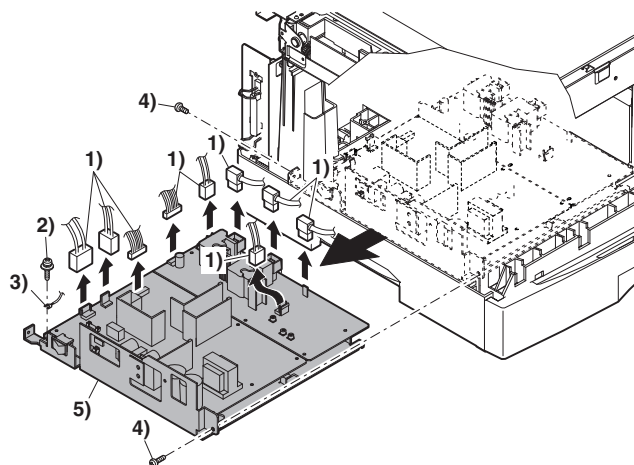
## 8. Power section

### A. List

No.	Part name	Ref.
1	Power PWB	

### B. Disassembly procedure

- 1) Disconnect each connector.
- 2) Remove the screw, and remove the earth line.
- 3) Remove two screws, and remove the power PWB unit.



### C. Assembly procedure

For assembly, reverse the disassembly procedure.

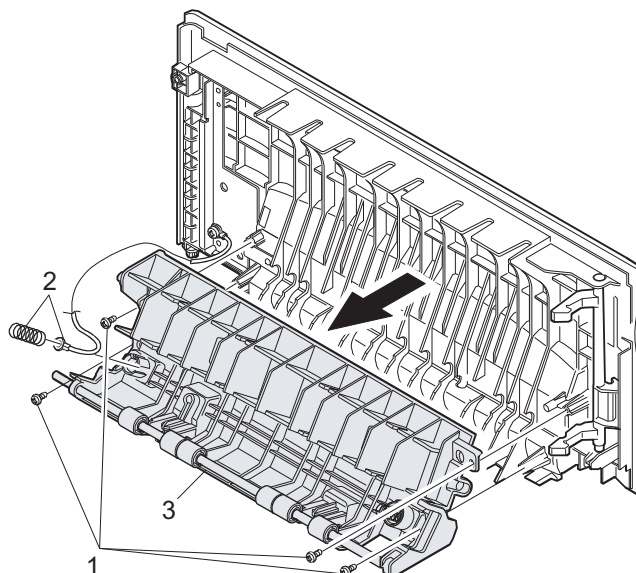
## 9. Reverse roller section

### A. List

No.	Part name	Ref.
1	Reverse roller	

### B. Disassembly procedure

- 1) Remove four screws.
- 2) Remove the spring, and the earth wire.
- 3) Remove the reverse unit.



### C. Assembly procedure

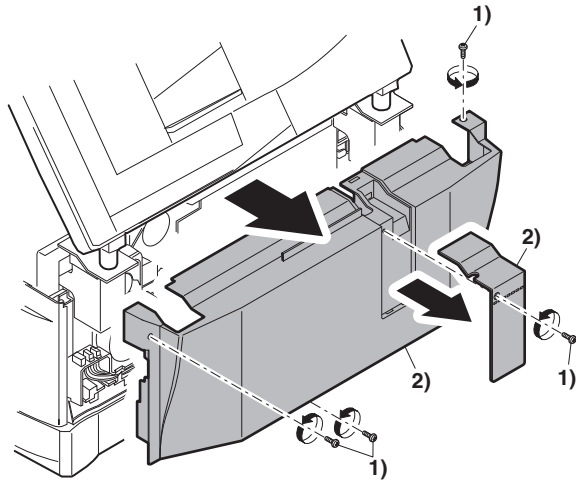
For assembly, reverse the disassembly procedure.

## 10. SPF section (Option)

No.	Part name Ref.
A	SPF motor
B	Pick-up roller, paper feed roller
C	Paper exit roller
D	Set sensor, scan front sensor
E	Transport roller

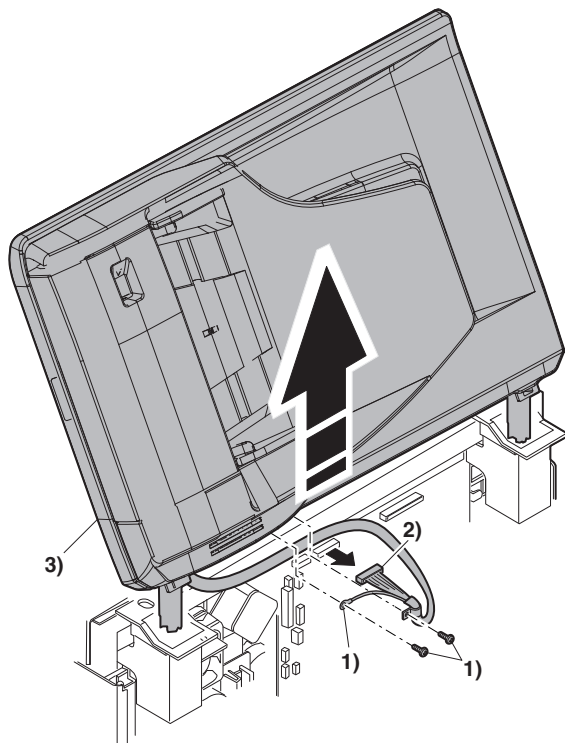
### (1) Rear cabinet disassembly

- 1) Remove four screws, and remove the rear cabinet and the rear cabinet cover.



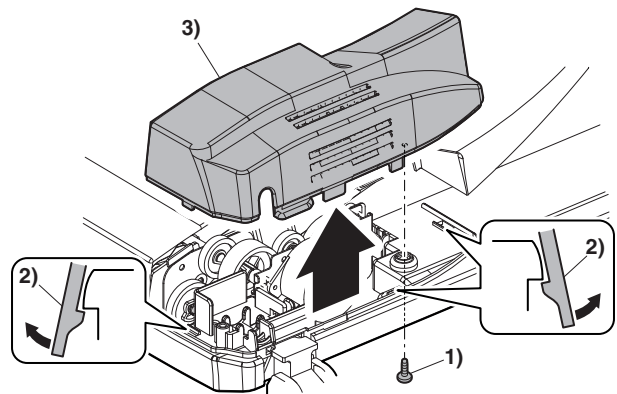
### (2) Remove the SPF.

- 1) Remove two screws, and remove the earth wire.
- 2) Disconnect the connector.
- 3) Remove the SPF unit.

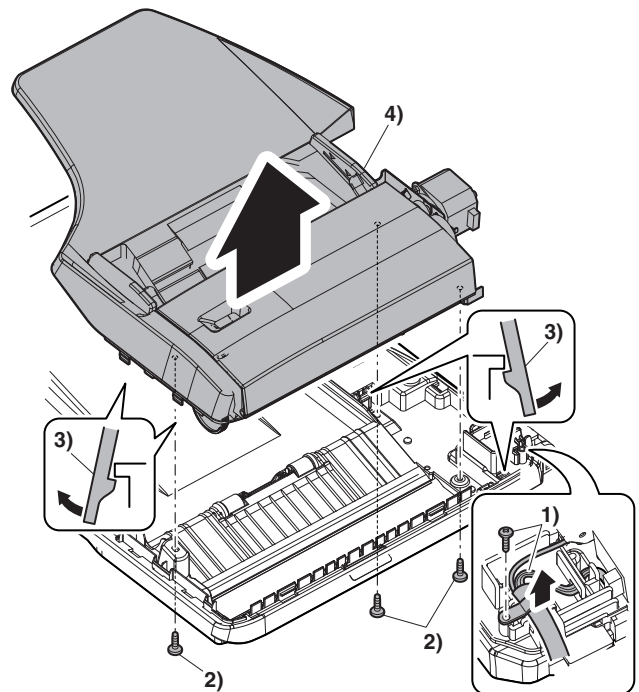


### A. SPF motor

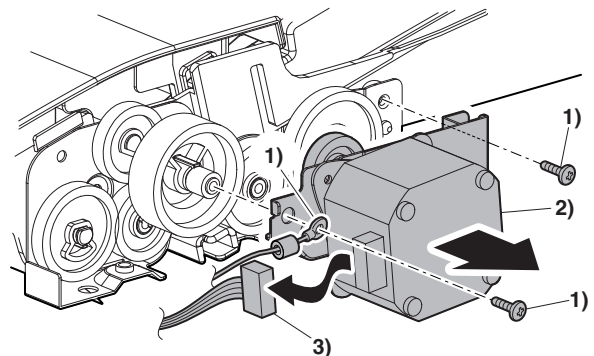
- 1) Remove the screw.
- 2) Disengage the pawl (3 positions).
- 3) Remove the rear cabinet.



- 1) Remove the screw, and remove the harness.
- 2) Remove three screws.
- 3) Disengage the pawl (4 positions).
- 4) Remove the transport unit.

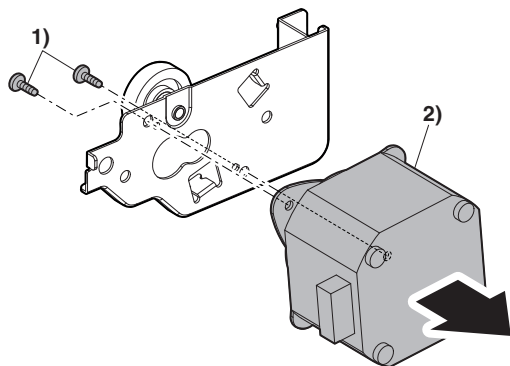


- 1) Remove two screws, and remove the earth wire.
- 2) Remove the SPF motor unit.
- 3) Disconnect the connector.



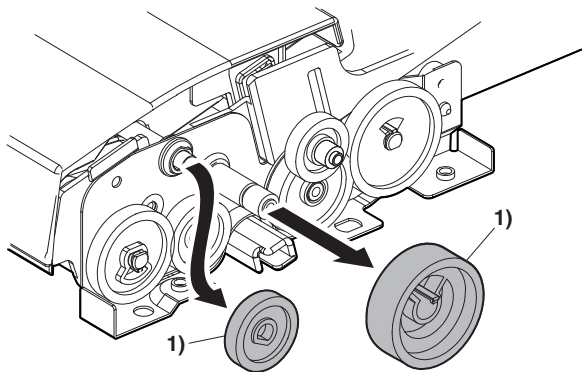


- 1) Remove two screws.
- 2) Remove the SPF motor.

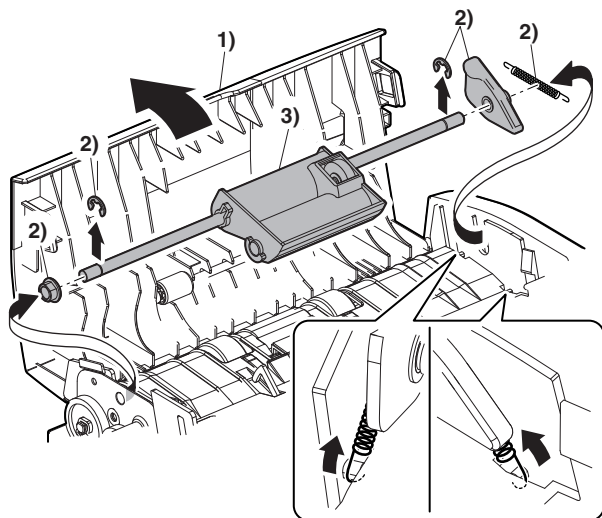


## B. Pick-up roller, paper feed roller

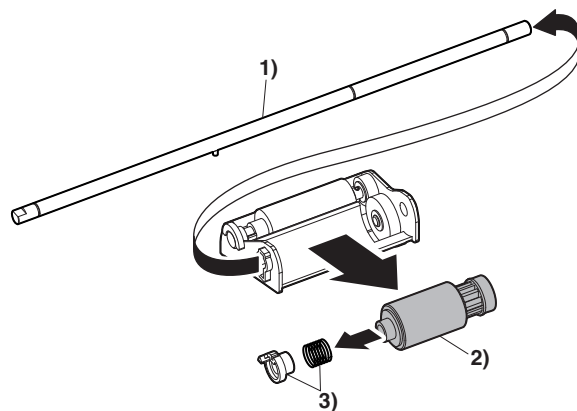
- 1) Remove two gears.



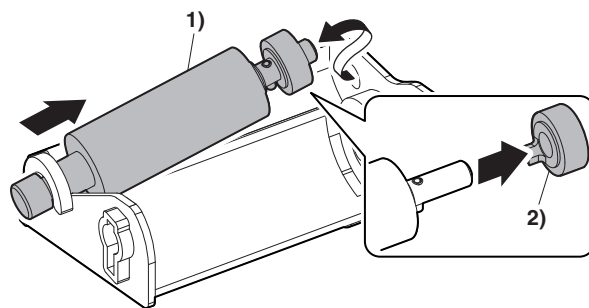
- 1) Open the upper door.
- 2) Remove two E-rings, and remove the spring, the arm, and the bearing.
- 3) Remove the pick-up roller unit.



- 1) Remove the shaft.
- 2) Remove the paper feed roller.
- 3) Remove the bearing and the spring.

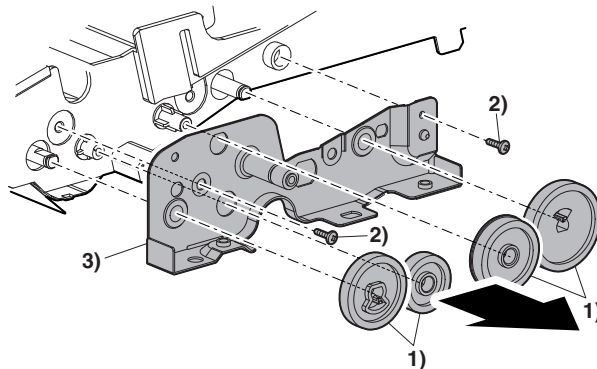


- 1) Remove the pick-up roller.
- 2) Remove the gear.

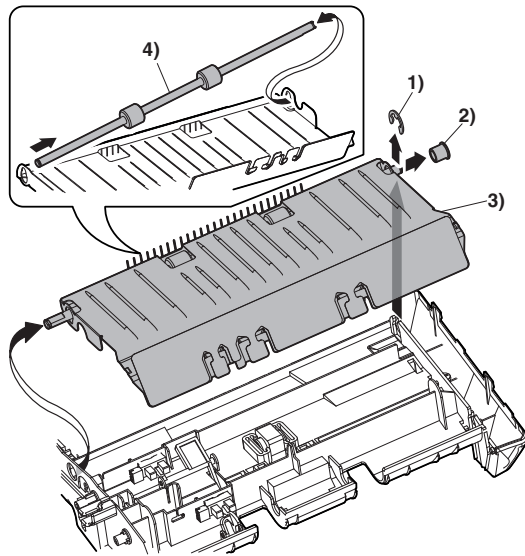


## C. Paper exit roller

- 1) Remove four gears.
- 2) Remove two screws.
- 3) Remove the frame.



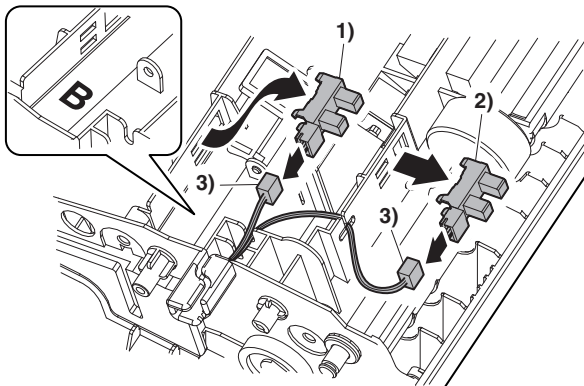
- 1) Remove the E-ring.
- 2) Remove the bearing.
- 3) Remove the paper guide unit.
- 4) Remove the paper exit roller.



#### D. Set sensor, scan front sensor

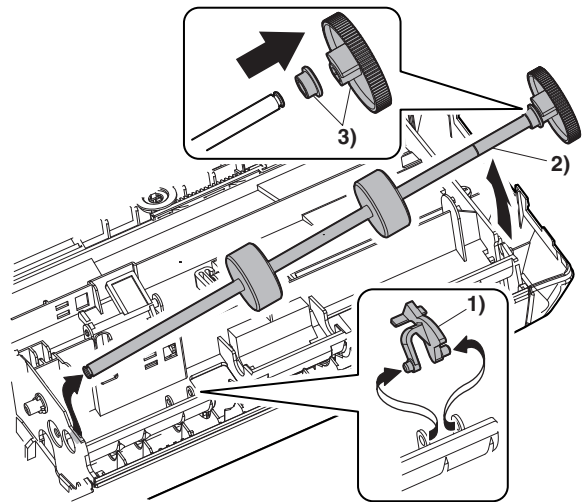
- 1) Remove the set sensor.
- 2) Remove the scan front sensor.
- 3) Disconnect the connectors.

\* When assembling, attach the blue harness to the marking B side of the sensor, and attach the orange harness to the opposite side sensor.



#### E. Transport roller

- 1) Remove the actuator.
- 2) Remove the transport roller.
- 3) Remove the gear and the bearing.



# [9] ADJUSTMENTS

## 1. Optical section

### A. Copy magnification ratio adjustment

The copy magnification ratio must be adjusted in the main scanning direction and in the sub scanning direction. To adjust, use SIM 48-1.

#### (1) Outline

The main scanning (front/rear) direction magnification ratio adjustment is made automatically or manually.

Automatic adjustment: The width of the reference line marked on the shading correction plate is scanned to perform the main scanning (front/rear) direction magnification ratio adjustment automatically.

Manual adjustment: The adjustment is made by [Copy quantity] keys operations. (In either of the automatic and manual adjustments, the zoom data register set value is changed for adjustment.) The magnification ratio in the sub scanning direction is adjusted by changing the carriage (scanner) scanning speed.

#### (2) Main scanning direction magnification ratio adjustment

##### a. Cases when the adjustment is required

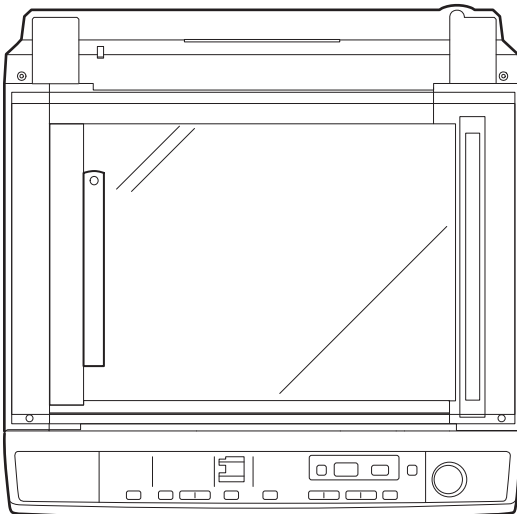
- 1) When the main PWB is replaced.
- 2) When the EEPROM in the main PWB is replaced.
- 3) When "U2" trouble occurs.
- 4) When repairing or replacing the optical section.

##### b. Necessary tools

- Screwdriver (+)
- Scale

##### c. Adjustment procedure

- 1) Set the scale vertically on the document table. (Use a long scale for precise adjustment.)

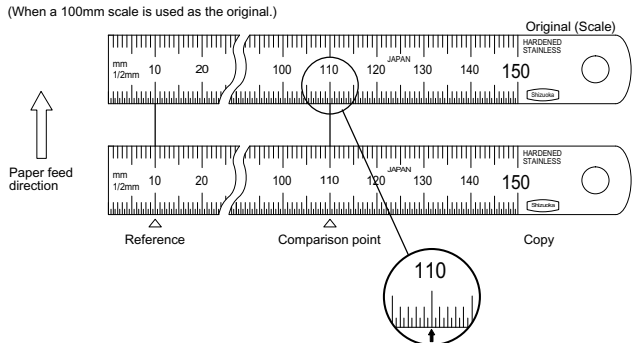


- 2) Set the copy magnification ratio to 100%.
- 3) Make a copy on A4 or 8 1/2" x 11" paper.
- 4) Measure the length of the copied scale image.

- 5) Calculate the main scanning direction magnification ratio.

Main scanning direction magnification ratio

$$= \frac{\text{Copy image dimensions}}{\text{Original dimension}} \times 100 (\%)$$



- 6) Check that the copy magnification ratio is within the specified range. If it is not within the specified range, perform the following procedures.
- 7) Execute SIM 48-1 to select the main scanning direction copy magnification ratio adjustment mode.  
To select the adjustment mode, use the [Exposure mode selector] key.

In the case of the automatic adjustment, when the START switch is pressed, the mirror base unit moves to the white plate for shading to scan the width of the reference line, calculating the correction value and displaying and storing this value.

After execution of the automatic adjustment, go out from the simulation mode and make a copy to check the magnification ratio.

If the magnification ratio is not in the specified range (100 ± 1.0%), manually adjust as follows.

Adjustment mode	Display lamp	Default
Main scanning direction magnification ratio	TEXT mode lamp	50
OC mode sub scan direction magnification ratio	PHOTO mode lamp	50

- 8) Enter the new set value of main scanning direction copy magnification ratio with the copy quantity key, and press the [START] key.
- 9) Change the set value and repeat the adjustment until the ratio is within the specified range.  
When the set value is changed by 1, the magnification ratio is changed by 0.1%.

#### (3) Sub scanning direction copy magnification ratio

##### a. Cases when the adjustment is required

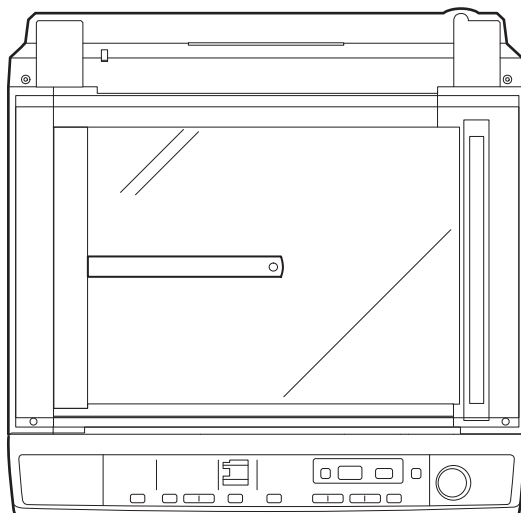
- 1) When the scanner unit drive section is disassembled or the part is replaced.
- 2) When the main PWB is replaced.
- 3) When the EEPROM in the main PWB is replaced.
- 4) When "U2" trouble occurs.

##### b. Necessary tools

- Scale

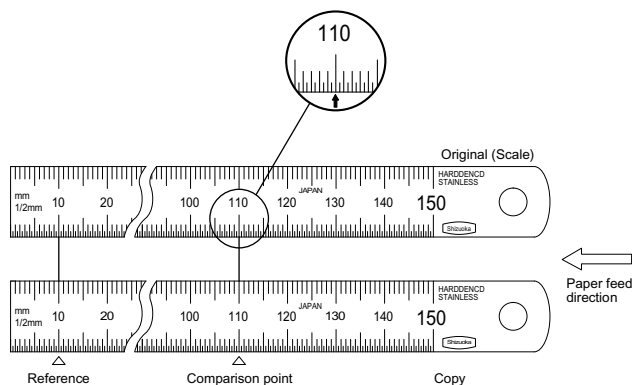
### c. Adjustment procedure

- 1) Set the scale on the document table as shown below. (Use a long scale for precise adjustment.)



- 2) Set the copy magnification ratio to 100%.
- 3) Make a copy on A4 or 8 1/2" x 11" paper.
- 4) Measure the length of the copied scale image.
- 5) Calculate the sub scanning direction copy magnification ratio using the formula below.

$$= \frac{\text{Copy image dimensions}}{\text{Original dimension}} \times 100 (\%)$$



- 6) Check that the actual copy magnification ratio is within the specified range. (100 ± 1.0%). If it is not within the specified range, perform the following procedures.
- 7) Execute SIM 48-1 to select the sub scanning direction copy magnification ratio adjustment mode. To select the adjustment mode, use the [Exposure mode selector] key. (PHOTO lamp ON)
- 8) Enter the new set value of sub scanning direction copy magnification ratio with the [Copy quantity] keys, and press the [START] key.

Repeat procedures 1) - 8) until the sub scanning direction actual copy magnification ratio in 100% copying is within the specified range.

When the set value is changed by 1, the magnification ratio is changed by 0.1%.

### B. Image position adjustment

There are following eleven kinds of image position adjustments, which are made by laser control except for the image scan start position adjustment. For the adjustments, SIM 50-01 and 50-10 are used.

No.	Mode	SIM	
1	Print start position (Main cassette paper feed)	50-01	
2	Print start position (Manual paper feed)	50-01	
3	Image lead edge void amount	50-01	
4	Image scan start position	50-01	
5	Image rear edge void amount (Cassette paper feed)	50-01	
6	Print center offset (Main cassette paper feed)	50-10	
7	Print center offset (Manual paper feed)	50-10	

To select the adjustment mode with SIM 50-01, use the [Exposure mode selector] key.

The relationship between the adjustment modes and the lighting lamps are as shown in the table below.

Adjustment mode	Lamp ON
Print start position (Main cassette paper feed)	AE, main cassette lamp
Print start position (Manual paper feed)	AE, manual feed lamp
Image lead edge void quantity	TEXT lamp
Image scan start position	PHOTO lamp
Image rear edge void quantity	AE, TEXT, PHOTO lamp

To select the adjustment mode with SIM 50-10, use the [Exposure mode selector] key.

The relationship between the adjustment modes and the lighting lamps are as shown in the table below.

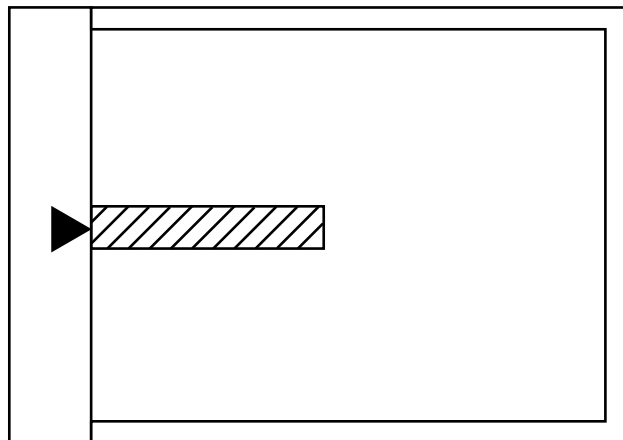
#### Machine with the multi manual paper feed unit

Adjustment mode	Lamp ON
Print center offset (Main cassette paper feed)	AE, main cassette lamp
Print center offset (Manual paper feed)	AE, manual paper feed lamp
☆ Second side center offset	TEXT lamp

☆: Supported for the installing model and skipped for non-installing mode.

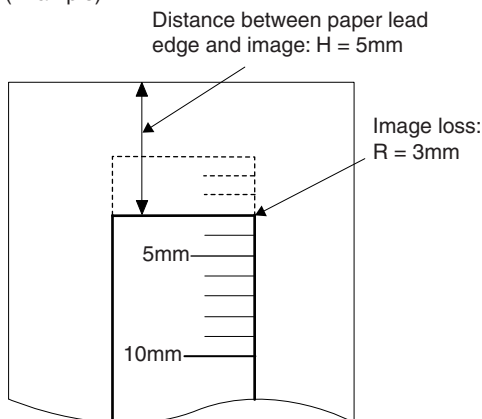
#### (1) Lead edge adjustment

- 1) Set a scale to the center of the paper lead edge guide as shown below, and cover it with B4 or 8 1/2" x 14" paper.



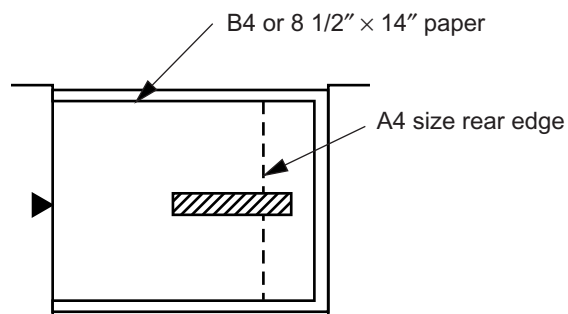
- 2) Execute SIM 50-01
- 3) Set the print start position (AE lamp ON) (A), the lead edge void amount (TEXT lamp ON) (B), and the scan start position (PHOTO lamp ON) (C) to 0, and make a copy of a scale at 100%.
- 4) Measure the image loss amount (R mm) of the scale image.  
Set  $C = 10 \times R$  (mm). (Example: Set the value of C to 30.)  
When the value of C is increased by 10, the image loss is decreased by 1mm. (Default: 50)
- 5) Measure the distance (H mm) between the paper lead edge and the image print start position.  
Set  $A = 10 \times H$  (mm). (Example: Set the value of A to 50.)  
When the value of A is increased by 10, the image lead edge is shifted to the paper lead edge by 1mm. (Default: 50)
- 6) Set the lead edge void amount to  $B = 50$  (2.5mm).  
When the value of B is increased by 10, the void amount is increased by about 1mm. For 25 or less, however, the void amount becomes zero. (Default: 50)

(Example)



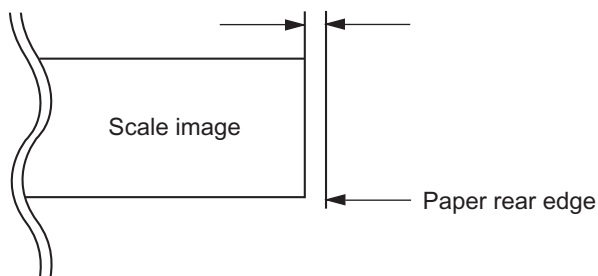
## (2) Image rear edge void amount adjustment

- 1) Set a scale to the rear edge section of A4 or 11" x 8 1/2" paper size as shown in the figure below, and cover it with B4 or 8 1/2" x 14" paper.



- 2) Execute SIM 50-01 to select the image rear edge void amount adjustment mode.  
The set adjustment value is displayed on the copy quantity display.
- 3) Make a copy and measure the void amount of image rear edge.

Void amount (Standard value: 2 - 3mm)

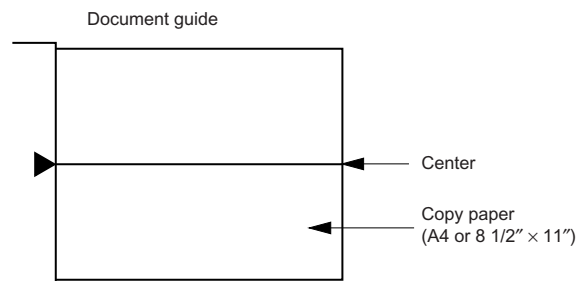


- 4) If the measurement value is out of the specified range, change the set value and repeat the adjustment procedure.  
The default value is 50.

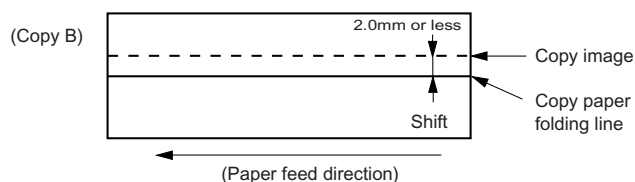
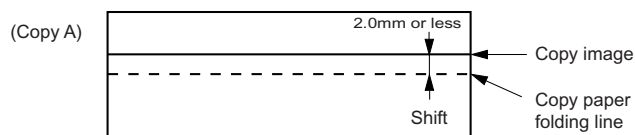
Note: The rear edge void cannot be checked with the first sheet after entering the simulation mode, the first sheet after turning off/on the power, or the first sheet after inserting the cassette. Use the second or later sheet to check the rear edge void.

## (3) Center offset adjustment

- 1) Set the self-made test chart for the center position adjustment so that its center line is aligned with the center mark of the document guide.
- Test chart for the center position adjustment.  
Draw a line at the center of A4 or 8 1/2" x 11" paper in the paper transport direction.



- 2) Execute SIM 50-10 to select the print center offset (cassette paper feed) adjustment mode.  
The set adjustment value is displayed on the copy quantity display.
- 3) Make a copy and check that the copied center line is properly positioned.  
The standard value is  $0 \pm 2\text{mm}$  from the paper center.



- 4) If the measured value is out of the specified range, change the set value and repeat the adjustment procedure.  
When the set value is increased by 1, the copy image is shifted by 0.1mm toward the rear frame.
- For the manual paper feed, change the manual paper feed adjustment mode and perform the similar procedures.
- Since the document center offset is automatically adjusted by the CCD which scan the reference lines (F/R) on the back of document guide, there is no need to adjust manually.

## 2. Copy density adjustment

### A. Copy density adjustment timing

The copy density adjustment must be performed in the following cases:

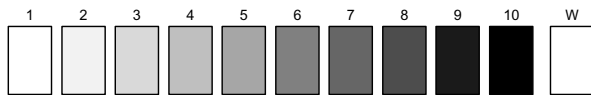
- When maintenance is performed.
- When the developing bias/grid bias voltage is adjusted.
- When the optical section is cleaned.
- When a part in the optical section is replaced.
- When the optical section is disassembled.
- When the OPC drum is replaced.
- When the main control PWB is replaced.
- When the EEPROM on the main control PWB is replaced.
- When the memory trouble (U2) occurs.

### B. Note for copy density adjustment

- 1) Arrangement before execution of the copy density adjustment
  - Clean the optical section.
  - Clean or replace the charger wire.
  - Check that the voltage at the high voltage section and the developing bias voltage are in the specified range.

### C. Necessary tool for copy density adjustment

- One of the following test charts:  
UKOG-0162FCZZ, UKOG-0089CSZZ, KODAK GRAY SCALE
- B4 (14" x 8 1/2") white paper
- The user program AE setting should be "3."



Test chart comparison table

	1	2	3	4	5	6	7	8	9	10	W
UKOG-0162FCZZ DENSITY No.	1	2	3	4	5	6	7	8	9	10	W
UKOG-0089CSZZ DENSITY No.	0.1		0.2		0.3				0.5	1.9	0
KODAK GRAY SCALE		1		2		3		4		19	A

### D. Features of copy density adjustment

For the copy density adjustment, the image data shift function provided in the image process LSI is used.

#### List of the adjustment modes

Auto mode	Brightness 1 step only
Manual mode	Brightness 5 steps. Adjustment of only the center brightness is made.
Photo mode	Brightness 5 steps. Adjustment of only the center brightness is made.
Manual T/S mode	Brightness 5 steps. Adjustment of only the center brightness is made.
T/S Auto mode	Brightness 1 step only

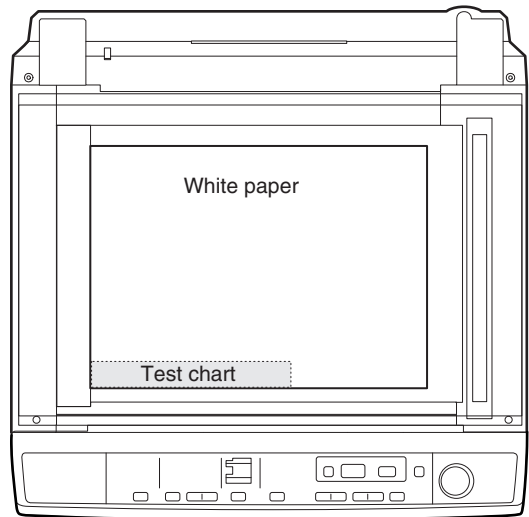
### E. Copy density adjustment procedure

Use SIM 46-1 to set the copy density for each copy mode.

For selection of modes, use the [Exposure mode selector] key.

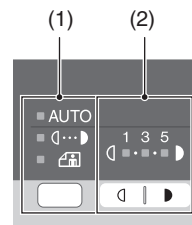
#### (1) Test chart (UKOG-0162FCZZ) setting

- 1) Place the test chart so that its edge is aligned with the A4 (Letter) reference line on the document table. Then place a A4 (14" x 8 1/2") white paper on the test chart and close the document cover.



#### (2) Perform the adjustment in each mode.

- 1) Execute SIM 46-01 (300dpi). To adjust in 600dpi, execute SIM 46-02.
- 2) Select the mode to be adjusted with the exposure mode select key. Set the exposure level to 3 for all adjustment. (Except for the auto mode.)



- (1) Exposure mode select key/display lamp  
(2) [Exposure mode selector] key/display lamp

Adjustment mode	Exposure mode display lamp	Sharp gray chart adjustment level
Auto mode	Auto lamp ON	"3" is slightly copied.
Manual mode	Manual lamp ON	"3" is slightly copied.
Photo mode	Photo lamp ON	"3" is slightly copied.
Manual T/S mode	Manual lamp/Photo lamp ON	"3" is slightly copied.
Auto T/S mode	Auto lamp/Photo lamp ON	"3" is slightly copied.



3) Make a copy.

Check the adjustment level (shown in the above table) of the exposure test chart (Sharp Gray Scale).

Sharp Gray Scale adjustment level	
Non toner save mode	
Toner save mode	

(When too bright): Decrease the value displayed on the copy quantity display.

(When too dark): Increase the value displayed on the copy quantity display.

\* The value can be set in the range of 1 - 99.

### 3. High voltage adjustment

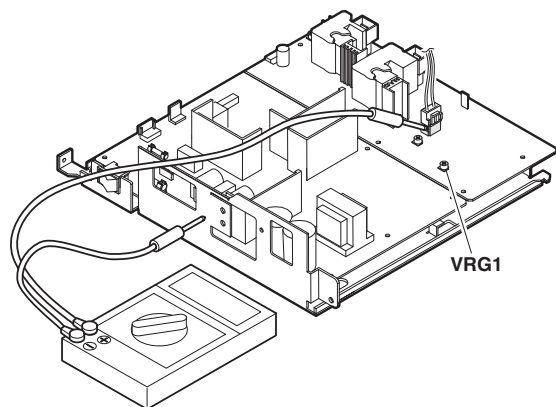
#### A. Main charger (Grid bias)

Note:

- Use a digital multi meter with internal resistance of 10MΩ or more measurement.
- After adjusting the grid LOW output, adjust the HIGH output. Do not reverse the sequence.

##### Procedures

- 1) Set the digital multi meter range to DC700V.
- 2) Set the positive side of the test rod to the connector CN11-3 (GRID) of high voltage section of the power PWB and set the negative side to the frame ground (power frame).
- 3) Execute SIM 8-2. (The main charger output is supplied for 30 sec in the grid voltage HIGH output mode.)
- 4) Adjust the control volume (VRG1) so that the output voltage is  $580 \pm 12V$ .

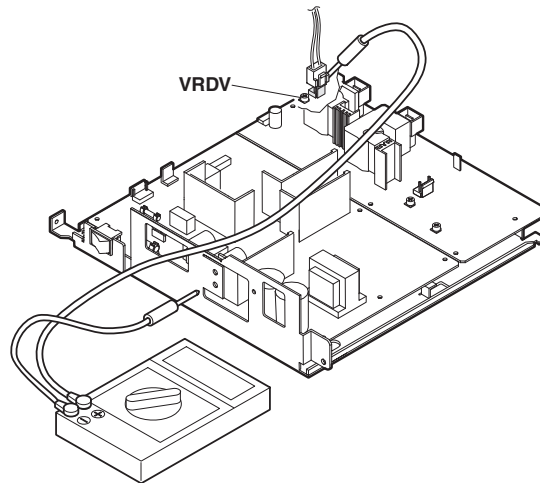


### B. DV bias check

- Note:
- A digital multi meter with internal resistance of 1GΩ must be use for correct check.
  - The adjustment volume is locked, and no adjustment can be made.

##### Procedures

- 1) Set the digital multi meter range to DC500V.
- 2) Set the positive side of the test rod to the connector CN-10-1 (DV BIAS) and set the negative side to the frame ground (power frame).
- 3) Execute SIM 8-1 to output the developing bias for 30sec, and check that the output is  $-400 \pm 8V$ .



### 4. SPF scan position automatic adjustment (Option)

Place a A4 paper (white chart) so that it covers the SPF scan glass and the OC glass together, and close the SPF.

When simulation 53-08 is executed, the current adjustment value is displayed as the initial display.

\* Default is 1. Adjustment range is 1 – 99. Adjustment unit 1 = about 0.127mm

\* If the values are kept as the default values, SPF scan is not performed properly. The front area of the proper scan position may be scanned.

In case of AUTO, press [START] key, and the mirror unit scans from the home position to the SPF scan position with the adjustment value displayed. The SPF glass cover edge position is calculated from the difference between the SPF glass cover edge and the OC side document glass CCD output level. If the adjustment is normal, the adjusted value is displayed. If abnormal, the error LED lights up with the current set value displayed.

During the error LED is lighted, when [START] key is pressed again, execution is performed again.

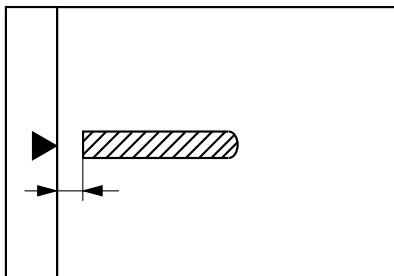
Mode	Display item	Default	LED
SPF scan position auto adjustment	AUTO	1	AE mode lamp (Option)
SPF scan position manual adjustment	MANU	1	TEXT mode lamp (Option)



## 5. SPF mode sub scanning direction magnification ratio adjustment (Option)

Note: Before performing this adjustment, be sure to check that the OC mode adjustment in copying has been completed.

- 1) Put a scale on the original table as shown below, and make a normal copy (100%) on the front and the back surfaces to make a test chart.



Note: Since the printed copy is used as a test chart, put the scale in parallel with the edge lines.

- 2) Set the test chart on the SPF and make a copy in the normal ratio (100%). (Option)
- 3) Compare the scale image and the actual image.  
If necessary, perform the following adjustment procedures.
- 4) Execute SIM 48-05.
- 5) The current sub scanning direction magnification ratio correction value is displayed in two digits on the display section.
- 6) Enter the set value and press the [START] key.

Mode	LED	Default
Sub scan magnification ratio adjustment on the surface of SPF document	AE mode lamp (Option)	50

\* When there is no document in SPF, copy is inhibited.

### <Adjustment specification>

Adjustment mode	Spec value	SIM	Set value	Setting range
Sub scanning direction magnification ratio (SPF mode)	At normal: $\pm 1.0\%$	48-5	Add 1: 0.1% increase Reduce 1: 0.1% decrease	1 – 99

## 6. Automatic black level correction

### a. Cases when the adjustment is required

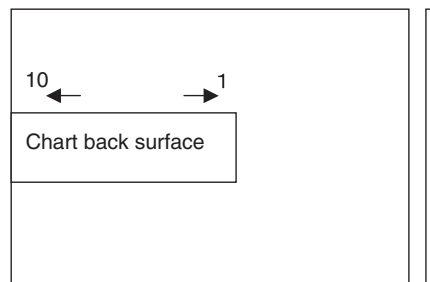
- 1) When the main PWB is replaced.
- 2) When the EEPROM in the main PWB is replaced.
- 3) When "U2" trouble occurs.
- 4) When repairing or replacing the optical section.

### b. Adjustment procedure

Used to acquire the black level target value used for the black level adjustment of white balance.

When SIM 63-02 is executed, the current correction value is displayed in 3 digits of 12bit hexadecimal number.

Place the gray gradation chart (UKOG-0162FCZZ) used as the correction document so that the density 10 (black side) comes on the left side and that the chart is upside down at the center of the plate left center.



When START key is pressed, the mirror base unit scans the chart and calculates the correction value.

After completion of correction, the corrected value is displayed on the display section.

\* Default: 0

\* If the value is set to the default, operation is made with 0x60.

# [10] SIMULATION, TROUBLE CODES

## 1. Entering the simulation mode

To enter the serviceman simulation mode, press the keys as follows:

[Clear] key → Exposure mode selector key → [Clear] key → Exposure mode selector key

## 2. Key rule

- [▲] [▲] key: Entry of MAIN CODE/SUB CODE  
Setting of the adjustment values for the adjustment-related simulations  
When [%] key is pressed simultaneously, the value is displayed in the descending sequence such as [0] → [9], not as [0] → [1].
- [START] key: Settlement  
<In case of simulations for print>  
[START] key: Settlement / Print  
(Interrupting operation check) Returns to the upper hierarchy.
- [Clear] key: On the initial display (00-00), it terminates the simulation.  
Exits from the simulation mode.  
For a simulation of adjustment, the display returns to the initial display (00-00).

## 3. List of simulations

Sim No.	Sub code	Operation
1	01	Mirror scan operation
	02	Mirror home position sensor (MHPS) status display
	06	Aging of mirror scanning
2	01	SPF aging operation (Option)
	02	SPF sensor status display (Option)
	03	SPF Motor ON (Option)
5	01	Operation panel display check
	02	Fusing lamp, cooling fan operation check
	03	Copy lamp ON
6	01	Paper feed solenoid ON
	02	Resist solenoid ON
7	01	Warm-up display and aging with jam
	06	Intermittent aging
	08	Shift to copy with the warm-up display
8	01	Developing bias
	02	Main charger (Grid high)
	03	Grid voltage (Low)
	06	Transfer charger
10		Toner motor aging
14		Cancel of troubles other than U2
16		Cancel of U2 trouble
20	01	Maintenance counter clear
21	01	Maintenance cycle setting
22	01	Maintenance counter display
	02	Maintenance preset display
	04	JAM total counter display
	05	Total counter display
	06	Developer counter display
	08	SPF counter display (Option)
	12	Drum counter display
	13	CRUM type display
	14	ROM version display
	17	Copy counter display
	18	Printer counter display
	19	Scanner mode counter display
	21	Scanner counter display
	22	SPF JAM counter display (Option)

Sim No.	Sub code	Operation
24	01	JAM total counter clear
	04	SPF counter clear (Option)
	06	Developer counter clear
	07	Drum counter clear
	08	Copy counter clear
	09	Printer counter clear
	13	Scanner counter clear
	14	SPF JAM total counter clear (Option)
	15	Scanner mode counter clear
25	01	Main motor operation check (Cooling fan motor rotation check)
	10	Polygon motor ON
26	02	SPF setup (Option)
	03	2nd cassette setup (Option)
	06	Destination setup
	07	Machine conditions check
	20	Rear edge void setup
	30	CE mark support control ON/OFF
	37	Cancel of stop at developer life over
	39	Memory capacity check
	40	Polygon motor OFF time setup (Time required for turning OFF after completion of printing)
	42	Transfer ON timing control setup
	43	Side void setup
	54	γ life correction setting
	62	Energy-save mode copy lamp setup
	69	Used to set the operating conditions for toner near end
30	01	Paper sensor status display
41	06	OC cover float detection level adjustment (Option)
	07	OC cover float detection margin setting (Option)
43	01	Fusing temperature setting (Normal copy)
	04	Fusing temperature setting in multi copy
	09	Postcard size paper fusing control setting
	11	Postcard size paper fusing temperature setting
	14	Fusing start temperature setting
	15	Postcard size paper fusing control cycle synchronization setting
46	01	Copy density adjustment (300dpi)
	02	Copy density adjustment (600dpi)
	18	Image contrast adjustment (300dpi)
	19	Exposure mode setup (AE mode)
	20	SPF exposure correction (Option)
	29	Image contrast adjustment (600dpi)
	30	AE limit adjustment
	31	Image sharpness adjustment
	32	Copier color reproduction setup
48	01	Front/rear (main scanning) direction and scan (sub scanning) direction magnification ratio adjustment
	05	SPF mode sub scan direction magnification ratio in copying (Option)
49	01	Flash ROM program writing mode
50	01	Lead edge image position
	06	Copy lead edge position adjustment (SPF) (Option)
	10	Center offset adjustment
	12	Document off-center adjustment
51	02	Resist quantity adjustment
53	08	SPF scan position automatic adjustment (Option)
61	03	Polygon motor check (HSYNC output check)
63	01	Shading check
	02	Black level automatic correction
	12	Light quantity stabilization wait time setting
	13	Light quantity stabilization band setting
64	01	Self print

## 4. Descriptions of various simulations

Main code	Sub code	Contents	Details of function/operation						
1	01	Mirror scan operation	<p><b>[Function]</b> When [OK]/[START] key is pressed, the home position is checked and the mirror base performs full scan at the speed of the set magnification ratio. During operation, the set magnification ratio is displayed. The mirror home position sensor status is displayed with the "Drum replacement required lamp ". (When the mirror is in the home position, the lamp lights up.) During operation, the copy lamp lights up. When [Clear] key is pressed, if the operation is on the way, it is terminated and the machine goes to the sub code entry standby mode. [ZOOM UP/DOWN] key (ZOOM LED ON) or [Fixed magnification ratio select] key (Fixed magnification ratio LED ON) * When [ZOOM UP/DOWN] key is pressed, the magnification ratio is displayed for a certain period, and the display returns to the sub code display. * When [%] key is being pressed, the magnification ratio can be displayed.</p>						
	02	Mirror home position sensor (MHPS) status display	<p><b>[Function]</b> Monitors the mirror home position sensor, and makes the "Drum replacement required lamp" turn on during the sensor ON status.</p>						
	06	Aging of mirror scanning	<p><b>[Function]</b> When [START] key is pressed, the mirror base performs full scan at the speed of the set magnification ratio. During operation, the set magnification ratio is displayed. After 3sec, the mirror base performs full scan again. * When [START] key is pressed once, the ready lamp remains OFF. The mirror home position sensor status is displayed on the "Drum replacement required lamp." (The lamp is ON when the mirror is in the home position.) During aging, the copy lamp is ON. <b>[Operation]</b> The operation is similar to simulation 1-01.</p>						
2	01	SPF aging operation (Option)	<p><b>[Function]</b> When [START] key is pressed, the set magnification ratio is obtained. For the SPF, the single-face document transport is performed. However, the operating conditions don't matter and the operation is not stopped even in case of a jam. <b>[Operation]</b> The operation is similar to simulation 1-01.</p>						
	02	SPF sensor status display (Option)	<p><b>[Function]</b> The ON/OFF status of the SPF sensors can be checked with the LED. When a sensor is ON, the sensor name is displayed on the LED.</p> <table><tr><th>Sensor</th><th>Display item (Option)</th></tr><tr><td>Document set sensor</td><td>Toner cartridge replacement required lamp</td></tr><tr><td>SPF document transport sensor</td><td>Misfeed lamp</td></tr></table>	Sensor	Display item (Option)	Document set sensor	Toner cartridge replacement required lamp	SPF document transport sensor	Misfeed lamp
	Sensor	Display item (Option)							
Document set sensor	Toner cartridge replacement required lamp								
SPF document transport sensor	Misfeed lamp								
03	SPF Motor ON (Option)	<p><b>[Function]</b> When [START] key is pressed, the motor rotates for 10sec at the speed corresponding to the set magnification ratio. <b>[Operation]</b> The operation is similar to simulation 1-01.</p>							

Main code	Sub code	Contents	Details of function/operation
5	01	Operation panel display check	<p><b>[Function]</b>          &lt;LED check mode (All ON / Individual ON)&gt;          When [ENTER/START] key is pressed, the LED on the operation panel lights up in all pixels. The status display is as follows:</p> <ul style="list-style-type: none"> <li>• After all ON (5 sec)</li> </ul> <p>7seg panel model:          Returns to the sub code input standby (Sub code blinking).</p> <ul style="list-style-type: none"> <li>• During LED check mode (All ON)</li> </ul> <p>7seg panel model:          When [1 UNIT UP] key is pressed, the machine goes into the individual lighting mode. When [C] key is pressed, the machine enters the sub code input standby state (sub code blinking).          When [START] key is pressed, the machine goes into the key input check mode. In the individual lighting mode, the LED on the operation panel moves from the top of the left edge to the bottom, then moves to the next right and from the top to the bottom. In this manner, all LED's are lighted sequentially. (For the 7seg display, the LED's of three digits are lighted at a time.) After completion of lighting all the LED's, the machine returns to the all-lighting state. It enters the sub code input standby state 5 sec after returning to the all-lighting state. (The cycle of the individual lighting mode is: ON: 300ms, OFF: 20ms)          &lt;Key input check mode&gt;          The status display is as follows:</p> <ul style="list-style-type: none"> <li>• 7seg display during the key input check mode</li> </ul> <p>7seg panel model: "---"          Every time a key on the operation panel is pressed, the number of input is added to be displayed on the 7seg display. The key which was pressed once is not counted again. When [START] key is pressed, the count is added. The machine goes to the LED lighting check mode (LED all-lighting state) 3sec after that.</p>
	02	Fusing lamp, cooling fan operation check	<p><b>[Function]</b>          When [OK]/[START] key is pressed, the fusing lamp repeats ON for 500ms and OFF for 500ms 5 times. During this period, the cooling fan motor rotates.</p>
	03	Copy lamp ON	<p><b>[Function]</b>          When [START] key is pressed, the copy lamp turns ON for 5sec.</p>
6	01	Paper feed solenoid ON	<p><b>[Function]</b>          When [START] key is pressed, the selected paper feed solenoid repeats ON for 500ms and OFF for 500ms 20times.</p>
	02	Resist solenoid ON	<p><b>[Function]</b>          When [START] key is pressed, the resist solenoid repeats ON for 500ms and OFF for 500ms 20 times.</p>
7	01	Warm-up display and aging with jam	<p><b>[Function]</b>          Copying is repeated to make the set quantity of copies. When the simulation is executed, warm-up is started and warm-up time is added for every second from 0 and displayed. When warm-up is completed, addition is stopped. When [Clear] key is pressed, the ready lamp lights up. After that, enter the copy quantity with [▲] [▲] key and press [START] key to repeat copying of the set quantity (interval 0sec). To cancel the simulation, turn off the power or execute a simulation which causes hardware reset.</p>
	06	Intermittent aging	<p><b>[Function]</b>          Copying is repeated to make the set quantity of copies. When the simulation is executed, warm-up is performed and the ready lamp is lighted. Enter the copy quantity with the [▲] [▲] key and press [START] key, and copying is executed to make the set quantity of copies, and the ready state is kept for 3sec, and copying is executed again to make the set quantity of copies. These operations are repeated. To cancel the simulation, turn off the power or execute a simulation which executes hardware reset.</p>
	08	Shift to copy with the warm-up display	<p><b>[Function]</b>          Enter the simulation code, and warm-up is started and warm-up time is counted for every second from 0 and displayed. When [Clear] key is pressed during counting up, "0" is displayed on the display and counting is stopped. However, warm-up is continued. After completion of warm-up, counting is terminated. (The aging function is removed from simulation 7-01.)</p>

Main code	Sub code	Contents	Details of function/operation																					
8	01	Developing bias	<b>[Function]</b> When [START] key is pressed, the developing bias signal is turned ON for 30sec. When, however, an actual output value is measured, use simulation 25-01. After completion of this process, the machine goes into the sub code entry standby mode.																					
	02	Main charger (Grid high)	<b>[Function]</b> When [START] key is pressed, the main charger is outputted for 30sec in the grid voltage HIGH move. After completion of this process, the machine goes into the sub code entry standby mode.																					
	03	Grid voltage (Low)	<b>[Function]</b> When [START] key is pressed, the main charger is outputted for 30sec in the grid voltage LOW move. After completion of this process, the machine goes into the sub code entry standby mode.																					
	06	Transfer charger	<b>[Function]</b> When [START] key is pressed, the transfer charger is outputted for 30sec. After completion of this process, the machine goes into the sub code entry standby mode.																					
10		Toner motor aging	<b>[Function]</b> When [START] key is pressed, the toner motor is rotated for 30sec. After completion of this process, the machine goes into the main code entry standby mode.																					
14		Cancel of troubles other than U2	<b>[Function]</b> Used to cancel troubles other than U2. * Cancel troubles such as H trouble which writes data into EEPROM, and perform hardware reset.																					
16		Cancel of U2 trouble	<b>[Function]</b> Used to cancel U2 trouble. When [START] key is pressed, check sum of the total counter in the EEPROM is rewritten and hardware reset is made.																					
20	01	Maintenance counter clear	<b>[Function]</b> When [START] key is pressed, the maintenance counter value is cleared to display “000,000.” The upper three digits and the lower three digits of “000,000” are displayed on the 7seg display.																					
21	01	Maintenance cycle setting	<b>[Function]</b> The code of the currently set maintenance cycle value (default display) is displayed and the set data are saved. <table border="1"><thead><tr><th>Code number</th><th>Setting</th><th>Remark</th></tr></thead><tbody><tr><td>0</td><td>3,000 sheets</td><td></td></tr><tr><td>1</td><td>6,000 sheets</td><td></td></tr><tr><td>2</td><td>9,000 sheets</td><td></td></tr><tr><td>3</td><td>13,000 sheets</td><td></td></tr><tr><td>4</td><td>25,000 sheets</td><td>Default</td></tr><tr><td>5</td><td>Free (999,999 sheets)</td><td></td></tr></tbody></table>	Code number	Setting	Remark	0	3,000 sheets		1	6,000 sheets		2	9,000 sheets		3	13,000 sheets		4	25,000 sheets	Default	5	Free (999,999 sheets)	
Code number	Setting	Remark																						
0	3,000 sheets																							
1	6,000 sheets																							
2	9,000 sheets																							
3	13,000 sheets																							
4	25,000 sheets	Default																						
5	Free (999,999 sheets)																							
22	01	Maintenance counter display	<b>[Function]</b> When [START] key is pressed, the maintenance counter value is displayed. The display method is the same as SIM20-01.																					
	02	Maintenance preset display	<b>[Function]</b> When [START] key is pressed, the number of sheets (25,000 sheets, etc.) corresponding to the code set with SIM21-01 is displayed. The display method of the value is the same as SIM20-01.																					
	04	JAM total counter display	<b>[Function]</b> The JAM total counter is displayed. <b>[Operation]</b> The count value is displayed in 3 digits X 2 times repeatedly. <Display example: 12345> 01 → Bla → 34 → Bla → 01 2    nk    5    nk    2 0.    0.3s    0.    1.0s    0. 7s            7s            7s																					
	05	Total counter display	<b>[Function]</b> The total counter value is displayed. <b>[Operation]</b> The operation is similar to simulation 22-04.																					

Main code	Sub code	Contents	Details of function/operation												
22	06	Developer counter display	<b>[Function]</b> When [START] key is pressed, the developer counter data are acquired and displayed. The display method of the value is the same as SIM20-01.												
	08	SPF counter display (Option)	<b>[Function]</b> The SPF counter is displayed. <b>[Operation]</b> The operation is similar to simulation 22-04.												
	12	Drum counter display	<b>[Function]</b> The drum counter is displayed. <b>[Operation]</b> The operation is similar to simulation 22-04.												
	13	CRUM type display	<b>[Function]</b> When [START] key is pressed, the CRUM type which is currently set (written) in the CRUM chip is displayed. <table border="1"><tr><th>Code number</th><th>CRUM type</th></tr><tr><td>00</td><td>Unsetting</td></tr><tr><td>01</td><td>BTA-A</td></tr><tr><td>02</td><td>BTA-B</td></tr><tr><td>03</td><td>BTA-C</td></tr><tr><td>99</td><td>Conversion</td></tr></table>	Code number	CRUM type	00	Unsetting	01	BTA-A	02	BTA-B	03	BTA-C	99	Conversion
	Code number	CRUM type													
	00	Unsetting													
	01	BTA-A													
	02	BTA-B													
	03	BTA-C													
99	Conversion														
14	ROM version display	<b>[Function]</b> The P-ROM version is displayed. <table border="1"><tr><th>Code number</th><th>Version</th></tr><tr><td>0</td><td>Main unit Program</td></tr></table> <b>[Operation]</b> The operation is similar to simulation 22-04.	Code number	Version	0	Main unit Program									
Code number	Version														
0	Main unit Program														
17	Copy counter display	<b>[Function]</b> The copy counter is displayed. <b>[Operation]</b> The operation is similar to simulation 22-04.													
18	Printer counter display	<b>[Function]</b> The printer counter is displayed. <b>[Operation]</b> The operation is similar to simulation 22-04.													
19	Scanner mode counter display	<b>[Function]</b> The scanner mode counter is displayed. <b>[Operation]</b> The operation is similar to simulation 22-16.													
21	Scanner counter display	<b>[Function]</b> The scanner counter is displayed. <b>[Operation]</b> The operation is similar to simulation 22-04.													
22	SPF JAM counter display (Option)	<b>[Function]</b> The SPF JAM counter is displayed. <b>[Operation]</b> The operation is similar to simulation 22-04.													
	01	JAM total counter clear	<b>[Function]</b> When [START] key is pressed, the JAM total counter is cleared to 0 and "000,000" is displayed on the LED/display. <b>[Operation]</b> The operation is similar to simulation 22-04.												
	04	SPF counter clear (Option)	<b>[Function]</b> When [START] key is pressed, the SPF counter value is cleared to 0 and "000,000" is displayed on the LED/display. <b>[Operation]</b> The operation is similar to simulation 22-04.												
24	06	Developer counter clear	<b>[Function]</b> When [START] key is pressed, the developer counter value is cleared to 0. The display method of the value is the same as SIM20-01.												

Main code	Sub code	Contents	Details of function/operation						
24	07	Drum counter clear	<b>[Function]</b> When [START] key is pressed, the drum counter value is cleared to 0, and "000,000" is displayed on the LED/display. <b>[Operation]</b> The operation is similar to simulation 22-04.						
	08	Copy counter clear	<b>[Function]</b> When [START] key is pressed, the copy counter value is cleared to 0, and "000,000" is displayed on the LED/display. <b>[Operation]</b> The operation is similar to simulation 22-04.						
	09	Printer counter clear	<b>[Function]</b> When [OK]/[START] key is pressed, the printer counter value is cleared to 0, and "000,000" is displayed on the LED/display. <b>[Operation]</b> The operation is similar to simulation 22-04.						
	13	Scanner counter clear	<b>[Function]</b> When [OK]/[START] key is pressed, the scanner counter value is cleared to 0, and "000,000" is displayed on the LED/display. <b>[Operation]</b> The operation is similar to simulation 22-04.						
	14	SPF JAM total counter clear (Option)	<b>[Function]</b> When [START] key is pressed, the SPF JAM total counter value is cleared to 0, and "000,000" is displayed on the LED/display. <b>[Operation]</b> The operation is similar to simulation 22-04.						
	15	Scanner mode counter clear	<b>[Function]</b> When [START] key is pressed, the scanner mode counter value is cleared to 0, and "000,000" is displayed on the LED/display. <b>[Operation]</b> The operation is similar to simulation 22-16.						
25	01	Main motor operation check (Cooling fan motor rotation check)	<b>[Function]</b> When [START] key is pressed, the main motor is operated for 30sec. To reduce toner consumption, if the developing unit is installed, the developing bias, the main charger, and the grid are also outputted. In this case, laser discharge is required when stopping the motor, the polygon motor is also operated at the same time. Check for installation of the developing unit. If it is not installed, the high voltage above is not outputted and only the motor is rotated. To check the developing bias, install the developing unit. After completion of 30sec operation, the machine goes into the sub code entry standby mode.						
	10	Polygon motor ON	<b>[Function]</b> When [START] key is pressed, the Bios is called to rotate the polygon motor for 30sec. After completion of 30sec operation, the operation is turned off with the Bios and the machine goes into the sub code entry standby mode.						
26	02	SPF setup (Option)	<b>[Function]</b> When this simulation is executed, the current set SPF is displayed. Enter the code number corresponding to the desired SPF and press [START] key to save the setting. <table border="1"><tr><td>Code number</td><td>SPF</td></tr><tr><td>0</td><td>SPF NO</td></tr><tr><td>1</td><td>SPF YES</td></tr></table>	Code number	SPF	0	SPF NO	1	SPF YES
	Code number	SPF							
0	SPF NO								
1	SPF YES								
	03	2nd cassette setup (Option)	<b>[Function]</b> When this simulation is executed, the current set 2nd cassette is displayed. Enter the code number corresponding to the desired 2nd cassette and press [START] key to save the setting. <table border="1"><tr><td>Code number</td><td>2nd cassette</td></tr><tr><td>0</td><td>2nd cassette NO</td></tr><tr><td>1</td><td>2nd cassette YES</td></tr></table>	Code number	2nd cassette	0	2nd cassette NO	1	2nd cassette YES
Code number	2nd cassette								
0	2nd cassette NO								
1	2nd cassette YES								



Main code	Sub code	Contents	Details of function/operation																				
26	06	Destination setup	<p><b>[Function]</b> When this simulation is executed, the current set destination is displayed. Enter the code number corresponding to the desired destination and press [OK]/[START] key to save the setting.</p> <table><tr><th>Code number</th><th>Destination</th></tr><tr><td>0</td><td>Inch series</td></tr><tr><td>1</td><td>EX Japan AB series</td></tr><tr><td>2</td><td>Japan AB series</td></tr><tr><td>3</td><td>China</td></tr></table> <p>* Code number 2 and 3 cannot be selected.</p> <p><b>[Operation]</b> The operation is similar to simulation 26-02.</p>	Code number	Destination	0	Inch series	1	EX Japan AB series	2	Japan AB series	3	China										
Code number	Destination																						
0	Inch series																						
1	EX Japan AB series																						
2	Japan AB series																						
3	China																						
	07	Machine conditions check	<p><b>[Function]</b> When this simulation is executed, the current machine setting is displayed.</p> <table><tr><th>CPM</th><th>Copy quantity</th><th>Remark</th></tr><tr><td>20 CPM</td><td>20</td><td></td></tr></table>	CPM	Copy quantity	Remark	20 CPM	20															
CPM	Copy quantity	Remark																					
20 CPM	20																						
	20	Rear edge void setup	<p><b>[Function]</b> When this simulation is executed, the current set rear edge void is displayed. Enter the code number corresponding to the desired rear edge void and press [START] key to save the setting.</p> <table><tr><th>Code number</th><th>Setting</th><th>Remark</th></tr><tr><td>0</td><td>Rear edge void NO</td><td></td></tr><tr><td>1</td><td>Rear edge void YES</td><td>Default</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 26-02.</p>	Code number	Setting	Remark	0	Rear edge void NO		1	Rear edge void YES	Default											
Code number	Setting	Remark																					
0	Rear edge void NO																						
1	Rear edge void YES	Default																					
	30	CE mark support control ON/OFF	<p><b>[Function]</b> When this simulation is executed, the current set CE mark support control is displayed. Enter the code number corresponding to the desired CE mark support control and press [START] key to save the setting.</p> <table><tr><th>Code number</th><th>Setting</th><th>Remark</th></tr><tr><td>0</td><td>CE mark support control OFF</td><td>Default (100V series)</td></tr><tr><td>1</td><td>CE mark support control ON</td><td></td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 26-02.</p>	Code number	Setting	Remark	0	CE mark support control OFF	Default (100V series)	1	CE mark support control ON												
Code number	Setting	Remark																					
0	CE mark support control OFF	Default (100V series)																					
1	CE mark support control ON																						
	37	Cancel of stop at developer life over	<p><b>[Function]</b> When this simulation is executed, the current setting is displayed. When the code number is entered and [START] key is pressed, the setting is changed.</p> <table><tr><th>Code number</th><th>Setup</th><th>Remark</th></tr><tr><td>0</td><td>Stop at developer life over</td><td></td></tr><tr><td>1</td><td>Cancel of stop at developer life over</td><td>Default</td></tr></table>	Code number	Setup	Remark	0	Stop at developer life over		1	Cancel of stop at developer life over	Default											
Code number	Setup	Remark																					
0	Stop at developer life over																						
1	Cancel of stop at developer life over	Default																					
	39	Memory capacity check	<p><b>[Function]</b> When the simulation is executed, the currently installed SDRAM of the main unit is displayed.</p> <table><tr><th>Code number</th><th>Setting</th><th>Remark</th></tr><tr><td>32</td><td>32 MBYTE</td><td></td></tr></table>	Code number	Setting	Remark	32	32 MBYTE															
Code number	Setting	Remark																					
32	32 MBYTE																						
	40	Polygon motor OFF time setup (Time required for turning OFF after completion of printing)	<p><b>[Function]</b> When this simulation is executed, the current setting is displayed. Enter the code number corresponding to the desired setting and press [START] key to save the setting.</p> <table><tr><th>Code number</th><th>Setting</th><th>Display item</th><th>Remark</th></tr><tr><td>0</td><td>0sec</td><td>0</td><td></td></tr><tr><td>1</td><td>30sec</td><td>30</td><td>Default</td></tr><tr><td>2</td><td>60sec</td><td>60</td><td></td></tr><tr><td>3</td><td>90sec</td><td>90</td><td></td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 26-02.</p>	Code number	Setting	Display item	Remark	0	0sec	0		1	30sec	30	Default	2	60sec	60		3	90sec	90	
Code number	Setting	Display item	Remark																				
0	0sec	0																					
1	30sec	30	Default																				
2	60sec	60																					
3	90sec	90																					

Main code	Sub code	Contents	Details of function/operation																																																																																												
26	42	Transfer ON timing control setup	<p><b>[Function]</b> Enter the code number with [UP/UP] key and press [START] key, and the entered set value is saved and the machine enters the sub code input standby state. Use [Density Select] key to select a mode. The set value of the selected mode is displayed in the 7seg display.</p> <table><tr><th>Mode</th><th>LED</th><th>Default</th><th>Setting range</th></tr><tr><td>Front surface paper lead edge</td><td>AE mode lamp</td><td>11</td><td>0 - 21</td></tr><tr><td>Front surface paper rear edge</td><td>TEXT mode lamp</td><td>50</td><td>1 - 99</td></tr><tr><td>Back surface paper lead edge</td><td>PHOTO mode lamp</td><td>11</td><td>0 - 21</td></tr><tr><td>Back surface paper rear edge</td><td>AE mode lamp TEXT mode lamp</td><td>50</td><td>1 - 99</td></tr></table> <p>&lt;Paper lead edge adjustment table&gt;</p> <table><tr><th>Code number</th><th>Setting</th></tr><tr><td>0</td><td>Default (236 msec)</td></tr><tr><td>1</td><td>-20 msec</td></tr><tr><td>2</td><td>-18 msec</td></tr><tr><td>3</td><td>-16 msec</td></tr><tr><td>4</td><td>-14 msec</td></tr><tr><td>5</td><td>-12 msec</td></tr><tr><td>6</td><td>-10 msec</td></tr><tr><td>7</td><td>-8 msec</td></tr><tr><td>8</td><td>-6 msec</td></tr><tr><td>9</td><td>-4 msec</td></tr><tr><td>10</td><td>-2 msec</td></tr></table> <table><tr><th>Code number</th><th>Setting</th></tr><tr><td>11</td><td>Default (236 msec)</td></tr><tr><td>12</td><td>+2 msec</td></tr><tr><td>13</td><td>+4 msec</td></tr><tr><td>14</td><td>+6 msec</td></tr><tr><td>15</td><td>+8 msec</td></tr><tr><td>16</td><td>+10 msec</td></tr><tr><td>17</td><td>+12 msec</td></tr><tr><td>18</td><td>+14 msec</td></tr><tr><td>19</td><td>+16 msec</td></tr><tr><td>20</td><td>+18 msec</td></tr><tr><td>21</td><td>+20 msec</td></tr></table> <p>* The default value, "11," of the transfer ON timing indicates "236msec passed from PS release." * When set to "0," it is same as setting to the default, "11." * The transfer ON timing can be adjusted to 236msec ± 2ms.</p> <p>&lt;Front/back surface of paper rear edge adjustment table&gt;</p> <table><tr><th>Code</th><th>Setting</th><th>Remark</th></tr><tr><td>1</td><td>-98 msec</td><td></td></tr><tr><td>...</td><td>...</td><td></td></tr><tr><td>49</td><td>-2 msec</td><td></td></tr><tr><td>50</td><td>0 msec</td><td>Default</td></tr><tr><td>51</td><td>+2 msec</td><td></td></tr><tr><td>...</td><td>...</td><td></td></tr><tr><td>99</td><td>+98 msec</td><td></td></tr></table> <p>* The default "50" of the transfer OFF timing indicates "210msec passed from PPD1OFF."</p>	Mode	LED	Default	Setting range	Front surface paper lead edge	AE mode lamp	11	0 - 21	Front surface paper rear edge	TEXT mode lamp	50	1 - 99	Back surface paper lead edge	PHOTO mode lamp	11	0 - 21	Back surface paper rear edge	AE mode lamp TEXT mode lamp	50	1 - 99	Code number	Setting	0	Default (236 msec)	1	-20 msec	2	-18 msec	3	-16 msec	4	-14 msec	5	-12 msec	6	-10 msec	7	-8 msec	8	-6 msec	9	-4 msec	10	-2 msec	Code number	Setting	11	Default (236 msec)	12	+2 msec	13	+4 msec	14	+6 msec	15	+8 msec	16	+10 msec	17	+12 msec	18	+14 msec	19	+16 msec	20	+18 msec	21	+20 msec	Code	Setting	Remark	1	-98 msec		...	...		49	-2 msec		50	0 msec	Default	51	+2 msec		...	...		99	+98 msec	
Mode	LED	Default	Setting range																																																																																												
Front surface paper lead edge	AE mode lamp	11	0 - 21																																																																																												
Front surface paper rear edge	TEXT mode lamp	50	1 - 99																																																																																												
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0	Default (236 msec)																																																																																														
1	-20 msec																																																																																														
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1	-98 msec																																																																																														
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49	-2 msec																																																																																														
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51	+2 msec																																																																																														
...	...																																																																																														
99	+98 msec																																																																																														

Main code	Sub code	Contents	Details of function/operation																																				
26	43	Side void setup	<p><b>[Function]</b> When this simulation is executed, the currently set code of the side void quantity is displayed (initial display), and the set data are saved. (Setting range: 0 – 10, Default: 4 (= One side 2.0mm))</p> <table><tr><th>Code</th><th>Setting</th><th>Remark</th></tr><tr><td>0</td><td>0 mm</td><td></td></tr><tr><td>1</td><td>0.5 mm</td><td></td></tr><tr><td>2</td><td>1.0 mm</td><td></td></tr><tr><td>3</td><td>1.5 mm</td><td></td></tr><tr><td>4</td><td>2.0 mm</td><td>Default</td></tr><tr><td>5</td><td>2.5 mm</td><td></td></tr><tr><td>6</td><td>3.0 mm</td><td></td></tr><tr><td>7</td><td>3.5 mm</td><td></td></tr><tr><td>8</td><td>4.0 mm</td><td></td></tr><tr><td>9</td><td>4.5 mm</td><td></td></tr><tr><td>10</td><td>5.0 mm</td><td></td></tr></table> <p>* When the adjustment value is increased by 1, the side void is changed as follows: Side void adjustment: The side void is increased by 0.5mm. (The side void of "Set value x 0.5mm" is made.)</p> <p><b>[Operation]</b> The operation is similar to simulation 09-04.</p>	Code	Setting	Remark	0	0 mm		1	0.5 mm		2	1.0 mm		3	1.5 mm		4	2.0 mm	Default	5	2.5 mm		6	3.0 mm		7	3.5 mm		8	4.0 mm		9	4.5 mm		10	5.0 mm	
Code	Setting	Remark																																					
0	0 mm																																						
1	0.5 mm																																						
2	1.0 mm																																						
3	1.5 mm																																						
4	2.0 mm	Default																																					
5	2.5 mm																																						
6	3.0 mm																																						
7	3.5 mm																																						
8	4.0 mm																																						
9	4.5 mm																																						
10	5.0 mm																																						
54		γ life correction setting	<p><b>[Function]</b> Used to set the γ life correction. When this simulation is executed, the current set code number is displayed. Enter the desired code number and press [START] key to save the setting. (Setting range: 0 – 1, default: 1)</p> <table><tr><th>Code number</th><th>Setting</th><th>Remark</th></tr><tr><td>0</td><td>OFF</td><td></td></tr><tr><td>1</td><td>ON</td><td>Default</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 26-02.</p>	Code number	Setting	Remark	0	OFF		1	ON	Default																											
Code number	Setting	Remark																																					
0	OFF																																						
1	ON	Default																																					
62		Energy-save mode copy lamp setup	<p><b>[Function]</b> Used to set half-ON /OFF of the copy lamp in the pre-heat mode. When this simulation is executed, the current set code number is displayed. Enter the desired code number and press [START] key to save the setting.</p> <table><tr><th>Code number</th><th>Setting</th><th>Remark</th></tr><tr><td>0</td><td>Copy lamp OFF</td><td></td></tr><tr><td>1</td><td>Copy lamp half-ON</td><td>Default</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 26-02.</p>	Code number	Setting	Remark	0	Copy lamp OFF		1	Copy lamp half-ON	Default																											
Code number	Setting	Remark																																					
0	Copy lamp OFF																																						
1	Copy lamp half-ON	Default																																					
69		Used to set the operating conditions for toner near end	<p><b>[Function]</b> This simulation is used to set the operating conditions for toner near end. The setting mode is switched by [Density select] key. The set value of the selected mode is displayed on the 7seg display. When the code number is entered and [START] key is pressed, the setting is switched. &lt;Toner near end display/No display&gt; Lighting LED: AE mode lamp</p> <table><tr><th>Code number</th><th>Setting contents</th></tr><tr><td>0</td><td>Toner near end is displayed</td></tr><tr><td>1</td><td>Toner near end is not displayed</td></tr></table> <p>&lt;Setting of operations at toner end&gt;</p> <table><tr><th>Code number</th><th>Setting contents</th></tr><tr><td>1</td><td>Operation setting 1</td></tr><tr><td>2</td><td>Operation setting 2</td></tr><tr><td>3</td><td>Operation setting 3</td></tr></table>	Code number	Setting contents	0	Toner near end is displayed	1	Toner near end is not displayed	Code number	Setting contents	1	Operation setting 1	2	Operation setting 2	3	Operation setting 3																						
Code number	Setting contents																																						
0	Toner near end is displayed																																						
1	Toner near end is not displayed																																						
Code number	Setting contents																																						
1	Operation setting 1																																						
2	Operation setting 2																																						
3	Operation setting 3																																						

Main code	Sub code	Contents	Details of function/operation																																							
30	01	Paper sensor status display	<p><b>[Function]</b> The paper sensor status is displayed on the LED.</p> <table><tr><th>Sensor</th><th>Signal</th><th>Display lamp</th></tr><tr><td>Paper exit sensor</td><td>POD</td><td>Photoconductor cartridge replacement lamp</td></tr><tr><td>Paper entry sensor</td><td>PPD1</td><td>Developer cartridge replacement lamp</td></tr><tr><td>Duplex sensor</td><td>PPD2</td><td>JAM lamp</td></tr><tr><td>2nd CS sensor</td><td>PPD3</td><td>2nd cassette lamp</td></tr></table> <p>* Since the manual paper feed sensor is a single bypass sensor, its status is not displayed.</p>	Sensor	Signal	Display lamp	Paper exit sensor	POD	Photoconductor cartridge replacement lamp	Paper entry sensor	PPD1	Developer cartridge replacement lamp	Duplex sensor	PPD2	JAM lamp	2nd CS sensor	PPD3	2nd cassette lamp																								
Sensor	Signal	Display lamp																																								
Paper exit sensor	POD	Photoconductor cartridge replacement lamp																																								
Paper entry sensor	PPD1	Developer cartridge replacement lamp																																								
Duplex sensor	PPD2	JAM lamp																																								
2nd CS sensor	PPD3	2nd cassette lamp																																								
41	06	OC cover float detection level adjustment (Option)	<p><b>[Function]</b> When this simulation is executed, the current set value is displayed. When [START] key is pressed, the mirror base unit moves to the SPF scan position to acquire the OC cover float detection level.  When the mirror base unit returns to the home position, the acquired value is displayed. If the adjustment is NG, the following message is displayed. Misfeed lamp lights up, and the 7seg display remains unchanged. Note that, this simulation must be executed with the OC cover closed. * If the value is 0, float detection is not performed in normal jobs.</p>																																							
	07	OC cover float detection margin setting (Option)	<p><b>[Function]</b> For the number of pixels between black markers on the SPF scanning position saved in "41-06: (OC cover float detection level adjustment)", if the number of pixels between the markers when processing float detection is less than the number of pixels set with this simulation, it is judged as the float error.  When the set value of this simulation is "0," no float error occurs. When this simulation is executed, the current set value is displayed. Enter the adjustment value with [▲] [▲] key and press [START] key. The setting is saved and the display is shifted to the sub code input standby menu. Setting range: 0 – 99 (Copes with margin 0 – 99 pixels.) Default: 30 (30 pixels)</p> <p><b>[Operation]</b> The operation is similar to simulation 9-04.</p>																																							
43	01	Fusing temperature setting (Normal copy)	<p><b>[Function]</b> Used to set the fusing temperature of 3rd or later sheet. (For 1st and 2nd sheets, SIM 43-14 is used.)  When this simulation is executed, the current set code number is displayed. Press [▲] [▲] key to change the setting and press [START] key to save the setting into the EERPOM. The machine goes into the sub code entry standby mode. The [Exposure mode selector] key is used to select the mode.</p> <table><tr><th>Code</th><th>Set temperature (°C)</th><th>Remark</th></tr><tr><td>0</td><td>170</td><td></td></tr><tr><td>1</td><td>175</td><td></td></tr><tr><td>2</td><td>180</td><td></td></tr><tr><td>3</td><td>185</td><td></td></tr><tr><td>4</td><td>190</td><td></td></tr></table> <table><tr><th>Code</th><th>Set temperature (°C)</th><th>Remark</th></tr><tr><td>5</td><td>195</td><td>Default</td></tr><tr><td>6</td><td>200</td><td></td></tr><tr><td>7</td><td>205</td><td></td></tr><tr><td>8</td><td>210</td><td></td></tr></table> <table><tr><th>Mode</th><th>Display item</th></tr><tr><td>Main cassette paper feed, 2nd cassette feed</td><td>AE mode lamp</td></tr><tr><td>Manual paper feed</td><td>TEXT mode lamp</td></tr></table> <p>* The cassette feed and the manual feed are controlled similarly.</p> <p><b>[Operation]</b> 1) Press [Exposure mode selector] key to change the mode. 2) Press [▲] [▲] key to set the value. 3) Press [START] key to fix the code number.</p>	Code	Set temperature (°C)	Remark	0	170		1	175		2	180		3	185		4	190		Code	Set temperature (°C)	Remark	5	195	Default	6	200		7	205		8	210		Mode	Display item	Main cassette paper feed, 2nd cassette feed	AE mode lamp	Manual paper feed	TEXT mode lamp
Code	Set temperature (°C)	Remark																																								
0	170																																									
1	175																																									
2	180																																									
3	185																																									
4	190																																									
Code	Set temperature (°C)	Remark																																								
5	195	Default																																								
6	200																																									
7	205																																									
8	210																																									
Mode	Display item																																									
Main cassette paper feed, 2nd cassette feed	AE mode lamp																																									
Manual paper feed	TEXT mode lamp																																									

Main code	Sub code	Contents	Details of function/operation																										
43	04	Fusing temperature setting in multi copy	<b>[Function]</b> For 20th sheet or later in multi copy, the fusing temperature is automatically changed from the temperature set with simulation 43-01 to the temperature set with this simulation. When this simulation is executed, the current set code number is displayed. Enter the code number and press [START] key to change the setting.																										
			Code	Set temperature (°C)	Remark	0	165		1	170		2	175		3	180		4	185		5	190		6	195		7	200	
			Code	Set temperature (°C)	Remark																								
0	165																												
1	170																												
2	175																												
3	180																												
4	185																												
5	190																												
6	195																												
7	200																												
Mode	Display lamp	Default Europe	Main cassette paper feed, 2nd cassette feed	AE mode lamp	3	Manual paper feed	TEXT mode lamp	3	Main cassette paper feed, 2nd cassette feed (small-size)	PHOTO mode lamp	3	Manual paper feed (small-size)	AE mode lamp TEXT mode lamp	3															
Mode	Display lamp	Default Europe																											
Main cassette paper feed, 2nd cassette feed	AE mode lamp	3																											
Manual paper feed	TEXT mode lamp	3																											
Main cassette paper feed, 2nd cassette feed (small-size)	PHOTO mode lamp	3																											
Manual paper feed (small-size)	AE mode lamp TEXT mode lamp	3																											
09		Postcard size paper fusing control setting	<b>[Operation]</b> The operation is similar to simulation 43-01.																										
			<b>[Function]</b> When this simulation is executed, the currently set code number is displayed. Enter the code number and press [START] key, and the setting is changed.																										
			Code	Shift temperature (°C)	Remark	0	Cancel	Default	1	Set																			
Code	Shift temperature (°C)	Remark																											
0	Cancel	Default																											
1	Set																												
11		Postcard size paper fusing temperature setting	<b>[Function]</b> When the simulation is executed, the current set value is displayed. Press [UP/UP] key to switch the setting. Press [START] key to write into the EEPROM. The machine enters the sub code input standby state.																										
			Code	Shift temperature (°C)	Remark	0	160		1	165		2	170		3	175		4	180		5	185		6	190		7	195	Default
Code	Shift temperature (°C)	Remark																											
0	160																												
1	165																												
2	170																												
3	175																												
4	180																												
5	185																												
6	190																												
7	195	Default																											
8	200																												

Main code	Sub code	Contents	Details of function/operation																																														
43	14	Fusing start temperature setting	<p><b>[Function]</b> When this simulation is started, the currently set code number is displayed. Press [▲] [▲] key to switch the setting, and press [START] key to save it to the EEPROM. The machine goes to the sub code entry standby mode.</p> <table><tr><th>Code</th><th>Set temperature (°C)</th><th>Remark</th></tr><tr><td>0</td><td>160</td><td></td></tr><tr><td>1</td><td>165</td><td></td></tr><tr><td>2</td><td>170</td><td></td></tr><tr><td>3</td><td>175</td><td></td></tr><tr><td>4</td><td>180</td><td></td></tr><tr><td>5</td><td>185</td><td></td></tr><tr><td>6</td><td>190</td><td></td></tr><tr><td>7</td><td>195</td><td></td></tr><tr><td>8</td><td>200</td><td></td></tr><tr><td>9</td><td>205</td><td></td></tr><tr><td>10</td><td>210</td><td></td></tr></table> <p>Switching to each mode is made by [Density Select] key. The set value of the selected mode is displayed on the 7seg display.</p> <table><tr><th rowspan="2">Mode</th><th rowspan="2">LED</th><th>Default</th></tr><tr><th>Europe</th></tr><tr><td>Maine cassette paper feed &amp; 2nd cassette paper feed</td><td>AE mode lamp</td><td>8</td></tr><tr><td>Manual paper feed</td><td>TEXT mode lamp</td><td>8</td></tr></table> <p>* The cassette feed and the manual feed are controlled similarly.</p> <p><b>[Operation]</b> The operation is similar to simulation 43-01.</p>	Code	Set temperature (°C)	Remark	0	160		1	165		2	170		3	175		4	180		5	185		6	190		7	195		8	200		9	205		10	210		Mode	LED	Default	Europe	Maine cassette paper feed & 2nd cassette paper feed	AE mode lamp	8	Manual paper feed	TEXT mode lamp	8
	Code	Set temperature (°C)	Remark																																														
0	160																																																
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10	210																																																
Mode	LED	Default																																															
		Europe																																															
Maine cassette paper feed & 2nd cassette paper feed	AE mode lamp	8																																															
Manual paper feed	TEXT mode lamp	8																																															
	15	Postcard size paper fusing control cycle synchronization setting	<p><b>[Function]</b> When this simulation is executed, the currently set code number is displayed. When [UP/UP] key is pressed, setting is switched. When [START] key is pressed, setting is written into the EEPROM, and the machine enters the sub code input standby state. (Setting range: 0 - 20, Default: 0)</p> <p>* When set to "0," the setting is canceled and the fusing temperature control and the paper pass timing are not synchronized. The conventional control (control same as other paper) is performed.</p> <p>* When set to "1" - "20," postcards are passed in synchronization with the fusing temperature control, ensuring stable fusing. However, the CPM becomes smaller.</p> <table><tr><th>Code</th><th>Synchronization setting</th><th>Fusing heater lamp OFF timing temperature</th><th>Remark</th></tr><tr><td>0</td><td>Cancel</td><td>-</td><td>Default</td></tr><tr><td>1</td><td rowspan="5">Setting</td><td>+ 0.5°C</td><td></td></tr><tr><td>...</td><td>...</td><td></td></tr><tr><td>6</td><td>+ 3.0°C</td><td></td></tr><tr><td>...</td><td>...</td><td></td></tr><tr><td>20</td><td>+ 10.0°C</td><td></td></tr></table> <p>* When set to "1" - "20" and when "set value x 0.5°C + control temperature," the fusing heater lamp is controlled to be OFF.</p>	Code	Synchronization setting	Fusing heater lamp OFF timing temperature	Remark	0	Cancel	-	Default	1	Setting	+ 0.5°C		...	...		6	+ 3.0°C		...	...		20	+ 10.0°C																							
Code	Synchronization setting	Fusing heater lamp OFF timing temperature	Remark																																														
0	Cancel	-	Default																																														
1	Setting	+ 0.5°C																																															
...		...																																															
6		+ 3.0°C																																															
...		...																																															
20		+ 10.0°C																																															



Main code	Sub code	Contents	Details of function/operation																					
46	01	Copy density adjustment (300dpi)	<p><b>[Function]</b> Copy density is set for each mode. When this simulation is executed, the current set value is displayed in 2 digits (Default: 50). Change the set value and press [START] key to make a copy under the set value. When the set value is increased, the copy becomes darker. When the set value is decreased, the copy becomes lighter. In this case, only Exp.3 copy is made. When, however, the setting is made to make darker copy, Exp.1 and Exp.5 copies also become darker. When made to lighter copy, Exp1. and Exp.5 copies become lighter, too. Press [Exposure mode selector] key to switch the mode. The set value of the selected mode is displayed on the LED/display. (Adjustment value: 1 – 99) The setting procedure of the magnification ratio is the same as that to copy operation.</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>AE mode (300dpi)</td><td>AE mode lamp</td><td>50</td></tr><tr><td>TEXT mode (300dpi)</td><td>TEXT mode lamp</td><td>50</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td><td>50</td></tr><tr><td>TS mode (TEXT) (300dpi)</td><td>TEXT mode lamp PHOTO mode lamp</td><td>50</td></tr><tr><td>TS mode (AE) (300dpi)</td><td>AE mode lamp PHOTO mode lamp</td><td>50</td></tr><tr><td>Dither mode</td><td>AE mode lamp TEXT mode lamp PHOTO mode lamp</td><td>50</td></tr></table> <p><b>[Operation]</b> 1) Press [Exposure mode selector] key to change the mode. 2) Press [▲] [▲] key to set the value. 3) [START] Fixing and printing value * Print is started in the set mode. * To cancel the manual paper feed tray paper empty MSG, press [Any] key. * When the AE mode exposure adjustment is made, put the chart on the rear side of the document table to avoid the center section (10cm).</p>	Mode	Display lamp	Default	AE mode (300dpi)	AE mode lamp	50	TEXT mode (300dpi)	TEXT mode lamp	50	PHOTO mode	PHOTO mode lamp	50	TS mode (TEXT) (300dpi)	TEXT mode lamp PHOTO mode lamp	50	TS mode (AE) (300dpi)	AE mode lamp PHOTO mode lamp	50	Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	50
	Mode	Display lamp	Default																					
AE mode (300dpi)	AE mode lamp	50																						
TEXT mode (300dpi)	TEXT mode lamp	50																						
PHOTO mode	PHOTO mode lamp	50																						
TS mode (TEXT) (300dpi)	TEXT mode lamp PHOTO mode lamp	50																						
TS mode (AE) (300dpi)	AE mode lamp PHOTO mode lamp	50																						
Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	50																						
02	Copy density adjustment (600dpi)	<p><b>[Function]</b> Copy density is set for each mode. When this simulation is executed, the current set value is displayed in 2 digits (Default: 50). Change the set value and press [START] key to make a copy under the set value. When the set value is increased, the copy becomes darker. When the set value is decreased, the copy becomes lighter. In this case, only Exp.3 copy is made. When, however, the setting is made to make darker copy, Exp.1 and Exp.5 copies also become darker. When made to lighter copy, Exp1. and Exp.5 copies become lighter, too. Press [Exposure mode selector] key to switch the mode. (Adjustment value: 1 – 99)</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>AE mode (600dpi)</td><td>AE mode lamp</td><td>50</td></tr><tr><td>TEXT mode (600dpi)</td><td>TEXT mode lamp</td><td>50</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td><td>50</td></tr><tr><td>TS mode (TEXT) (600dpi)</td><td>TEXT mode lamp PHOTO mode lamp</td><td>50</td></tr><tr><td>TS mode (AE) (600dpi)</td><td>AE mode lamp PHOTO mode lamp</td><td>50</td></tr><tr><td>Dither mode</td><td>AE mode lamp TEXT mode lamp PHOTO mode lamp</td><td>50</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Default	AE mode (600dpi)	AE mode lamp	50	TEXT mode (600dpi)	TEXT mode lamp	50	PHOTO mode	PHOTO mode lamp	50	TS mode (TEXT) (600dpi)	TEXT mode lamp PHOTO mode lamp	50	TS mode (AE) (600dpi)	AE mode lamp PHOTO mode lamp	50	Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	50	
Mode	Display lamp	Default																						
AE mode (600dpi)	AE mode lamp	50																						
TEXT mode (600dpi)	TEXT mode lamp	50																						
PHOTO mode	PHOTO mode lamp	50																						
TS mode (TEXT) (600dpi)	TEXT mode lamp PHOTO mode lamp	50																						
TS mode (AE) (600dpi)	AE mode lamp PHOTO mode lamp	50																						
Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	50																						

Main code	Sub code	Contents	Details of function/operation																												
46	18	Image contrast adjustment (300dpi)	<p><b>[Function]</b> Contrast is set for each mode. When this simulation is executed, the current set value is displayed in 2 digits (Default: 50). Change the set value and press [START] key to make a copy under the set value. When the set value is increased, the contrast becomes higher. When the set value is decreased, the contrast becomes lower. In this case, only Exp.3 copy is made. When, however, the setting is made to make higher contrast, Exp.1 and Exp.5 copies also become in higher contrast. When made to a lower contrast, Exp1. and Exp.5 copies become lower contrast, too. Press [Exposure mode selector] key to switch the mode. The set value of the selected mode is displayed on the LED/display. (Adjustment value: 1 – 99)</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>AE mode (300dpi)</td><td>AE mode lamp</td><td>50</td></tr><tr><td>TEXT mode (300dpi)</td><td>TEXT mode lamp</td><td>50</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td><td>50</td></tr><tr><td>TS mode (TEXT) (300dpi)</td><td>TEXT mode lamp PHOTO mode lamp</td><td>50</td></tr><tr><td>TS mode (AE) (300dpi)</td><td>AE mode lamp PHOTO mode lamp</td><td>50</td></tr><tr><td>Dither mode</td><td>AE mode lamp TEXT mode lamp PHOTO mode lamp</td><td>50</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Default	AE mode (300dpi)	AE mode lamp	50	TEXT mode (300dpi)	TEXT mode lamp	50	PHOTO mode	PHOTO mode lamp	50	TS mode (TEXT) (300dpi)	TEXT mode lamp PHOTO mode lamp	50	TS mode (AE) (300dpi)	AE mode lamp PHOTO mode lamp	50	Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	50							
	Mode	Display lamp	Default																												
AE mode (300dpi)	AE mode lamp	50																													
TEXT mode (300dpi)	TEXT mode lamp	50																													
PHOTO mode	PHOTO mode lamp	50																													
TS mode (TEXT) (300dpi)	TEXT mode lamp PHOTO mode lamp	50																													
TS mode (AE) (300dpi)	AE mode lamp PHOTO mode lamp	50																													
Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	50																													
19	Exposure mode setup (AE mode)	<p><b>[Function]</b> &lt;<math>\gamma</math> table setting&gt; When this simulation is executed, the code number of the current set gamma table is displayed. (Default: 2) Enter the code number corresponding to the desired gamma table, and press [Exposure mode selector] key to change the mode and write into the EEPROM.</p> <p>&lt;AE operation mode&gt; When setting the <math>\gamma</math> table, press [Exposure mode selector] key to change to the AE operation mode, and the current set code number of the AE operation mode is displayed. (Default: 0) Enter the code number corresponding to the desired AE operation mode and press [Exposure mode selector] key to change the mode and write into the EEPROM.</p> <p>&lt;PHOTO image process setting&gt; When [Exposure mode selector] key is pressed in AE operation mode setting, the mode is changed to the PHOTO image process setting and the code number of the current set PHOTO image process setting is displayed. (Default: 1) Enter the code number corresponding to the desired PHOTO image process setting and press [Exposure mode selector] key to change the mode and write into the EEPROM.</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Code number</th><th>Setting content</th><th>Remark</th></tr><tr><td rowspan="2"><math>\gamma</math></td><td rowspan="2">OFF</td><td>1</td><td>Image quality priority mode</td><td></td></tr><tr><td>2</td><td>Toner consumption priority mode</td><td>Default</td></tr><tr><td rowspan="2">AE</td><td rowspan="2">AE</td><td>0</td><td>Lead edge stop</td><td>Default</td></tr><tr><td>1</td><td>Real time process</td><td></td></tr><tr><td rowspan="2">PHOTO</td><td rowspan="2">PHOTO</td><td>1</td><td>Error diffusion process</td><td>Default</td></tr><tr><td>2</td><td>Dither process</td><td></td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Code number	Setting content	Remark	$\gamma$	OFF	1	Image quality priority mode		2	Toner consumption priority mode	Default	AE	AE	0	Lead edge stop	Default	1	Real time process		PHOTO	PHOTO	1	Error diffusion process	Default	2	Dither process	
Mode	Display lamp	Code number	Setting content	Remark																											
$\gamma$	OFF	1	Image quality priority mode																												
		2	Toner consumption priority mode	Default																											
AE	AE	0	Lead edge stop	Default																											
		1	Real time process																												
PHOTO	PHOTO	1	Error diffusion process	Default																											
		2	Dither process																												

Main code	Sub code	Contents	Details of function/operation																				
46	20	SPF exposure correction (Option)	<p><b>[Function]</b> Used to adjust the exposure correction amount in the SPF mode. The adjustment is made by adjusting Vref voltage variation for the OC mode. When this simulation is executed, the current set value is displayed in 2 digits (Default: 50). Change the set value and press [START] key to save the setting and make a copy. When the set value is increased, copy becomes darker. When the set value is decreased, copy becomes lighter. (Adjustment range: 1 – 99)</p> <table><tr><td>Mode</td><td>Display item</td><td>Display lamp</td><td>Default</td><td>Remark</td></tr><tr><td>SPF</td><td>SPF</td><td>TEXT mode lamp</td><td>50</td><td></td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display item	Display lamp	Default	Remark	SPF	SPF	TEXT mode lamp	50											
Mode	Display item	Display lamp	Default	Remark																			
SPF	SPF	TEXT mode lamp	50																				
29	Image contrast adjustment (600dpi)	<p><b>[Function]</b> Contrast is set for each mode. When this simulation is executed, the current set value is displayed in 2 digits (Default: 50). Change the set value and press [START] key to make a copy under the set value. When the set value is increased, the contrast becomes higher. When the set value is decreased, the contrast becomes lower. In this case, only Exp.3 copy is made. When, however, the setting is made to make higher contrast, Exp.1 and Exp.5 copies also become in higher contrast. When made to a lower contrast, Exp1. and Exp.5 copies become lower contrast, too. Press [Exposure mode selector] key to switch the mode. The set value of the selected mode is displayed on the LED/display. (Adjustment value: 1 – 99)</p> <table><tr><td>Mode</td><td>Display lamp</td><td>Default</td></tr><tr><td>AE mode (600dpi)</td><td>AE mode lamp</td><td>50</td></tr><tr><td>TEXT mode (600dpi)</td><td>TEXT mode lamp</td><td>50</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td><td>50</td></tr><tr><td>TS mode (TEXT) (600dpi)</td><td>TEXT mode lamp PHOTO mode lamp</td><td>50</td></tr><tr><td>TS mode (AE) (600dpi)</td><td>AE mode lamp PHOTO mode lamp</td><td>50</td></tr><tr><td>Dither mode</td><td>AE mode lamp TEXT mode lamp PHOTO mode lamp</td><td>50</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Default	AE mode (600dpi)	AE mode lamp	50	TEXT mode (600dpi)	TEXT mode lamp	50	PHOTO mode	PHOTO mode lamp	50	TS mode (TEXT) (600dpi)	TEXT mode lamp PHOTO mode lamp	50	TS mode (AE) (600dpi)	AE mode lamp PHOTO mode lamp	50	Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	50
Mode	Display lamp	Default																					
AE mode (600dpi)	AE mode lamp	50																					
TEXT mode (600dpi)	TEXT mode lamp	50																					
PHOTO mode	PHOTO mode lamp	50																					
TS mode (TEXT) (600dpi)	TEXT mode lamp PHOTO mode lamp	50																					
TS mode (AE) (600dpi)	AE mode lamp PHOTO mode lamp	50																					
Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	50																					
30	AE limit adjustment	<p><b>[Function]</b> Used to set the limit value in AE and AE (toner save). Change the setting and press [START] key to write the setting into the EEPROM. The machine goes into the sub code entry standby mode. By pressing [Exposure mode selector] key, setting is changed. (Setting range: 0 – 255, Default: 196)</p> <table><tr><td>Mode</td><td>Display lamp</td><td>Remark</td></tr><tr><td>Limit value for AE (OC)</td><td>AE mode lamp</td><td></td></tr><tr><td>Limit value for AE (OC) (toner save)</td><td>TEXT mode lamp</td><td></td></tr><tr><td>Limit value for AE (SPF)</td><td>AE mode lamp PHOTO mode lamp</td><td></td></tr><tr><td>Limit value for AE (SPF) (toner save)</td><td>TEXT mode lamp PHOTO mode lamp</td><td></td></tr></table> <p>&lt;Remark&gt; When simulation 26-06 (Destination setting) or simulation 46-19 Auto Exposure mode is changed, the setting of this simulation is also changed to the default in connection.</p> <p><b>[Operation]</b> The operation is similar to simulation 46-19.</p>	Mode	Display lamp	Remark	Limit value for AE (OC)	AE mode lamp		Limit value for AE (OC) (toner save)	TEXT mode lamp		Limit value for AE (SPF)	AE mode lamp PHOTO mode lamp		Limit value for AE (SPF) (toner save)	TEXT mode lamp PHOTO mode lamp							
Mode	Display lamp	Remark																					
Limit value for AE (OC)	AE mode lamp																						
Limit value for AE (OC) (toner save)	TEXT mode lamp																						
Limit value for AE (SPF)	AE mode lamp PHOTO mode lamp																						
Limit value for AE (SPF) (toner save)	TEXT mode lamp PHOTO mode lamp																						

Main code	Sub code	Contents	Details of function/operation																																				
46	31	Image sharpness adjustment	<p><b>[Function]</b> Used to adjust sharpening/blurring of image in each mode.</p> <table><tr><th>Image quality</th><th>Setting No</th><th>Remark</th></tr><tr><td>Blurring</td><td>0</td><td></td></tr><tr><td>Standard</td><td>1</td><td>Default</td></tr><tr><td>Sharpening</td><td>2</td><td></td></tr></table> <p>When this simulation is executed, warm-up and shading are performed and the current set value is displayed. (Default: 1) Change the set value and press [START] key to make a copy under the set conditions. To change the mode, press [Exposure mode selector] key. The code number of the selected mode is displayed on the LED/display.</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>AE mode</td><td>AE mode lamp</td><td>1</td></tr><tr><td>TEXT mode</td><td>TEXT mode lamp</td><td>1</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td><td>1</td></tr><tr><td>TS mode (TEXT)</td><td>TEXT mode lamp PHOTO mode lamp</td><td>1</td></tr><tr><td>TS mode (AE)</td><td>AE mode lamp PHOTO mode lamp</td><td>1</td></tr><tr><td>Dither mode</td><td>AE mode lamp TEXT mode lamp PHOTO mode lamp</td><td>1</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Image quality	Setting No	Remark	Blurring	0		Standard	1	Default	Sharpening	2		Mode	Display lamp	Default	AE mode	AE mode lamp	1	TEXT mode	TEXT mode lamp	1	PHOTO mode	PHOTO mode lamp	1	TS mode (TEXT)	TEXT mode lamp PHOTO mode lamp	1	TS mode (AE)	AE mode lamp PHOTO mode lamp	1	Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	1			
	Image quality	Setting No	Remark																																				
Blurring	0																																						
Standard	1	Default																																					
Sharpening	2																																						
Mode	Display lamp	Default																																					
AE mode	AE mode lamp	1																																					
TEXT mode	TEXT mode lamp	1																																					
PHOTO mode	PHOTO mode lamp	1																																					
TS mode (TEXT)	TEXT mode lamp PHOTO mode lamp	1																																					
TS mode (AE)	AE mode lamp PHOTO mode lamp	1																																					
Dither mode	AE mode lamp TEXT mode lamp PHOTO mode lamp	1																																					
	32	Copier color reproduction setup	<p><b>[Function]</b> Used to set color reproduction in each mode. Colors easy to be copied and colors difficult to be copied can be switched.</p> <table><tr><th>Set value</th><th>Colors easy to be copied</th><th>Colors difficult to be copied</th></tr><tr><td>0</td><td>Purple, Blue, Red</td><td>Yellow, Green, Water blue</td></tr><tr><td>1</td><td>Water blue, Green, Blue</td><td>Purple, Red, Yellow</td></tr><tr><td>2</td><td>Yellow, Red, Green</td><td>Blue, Water blue, Purple</td></tr></table> <p>* This setting has virtually no effect on black-and-white documents.</p> <p>When this simulation is executed, warm-up and shading are performed and the current set value is displayed. (Default: 0) Press [START] key to make a copy under the set conditions . At that time, color components are changed for used in copying. To change the mode, press [Exposure mode selector] key. The code number of the selected mode is displayed on the LED/display.</p> <table><tr><th>Specification component</th><th>Setting No</th><th>Remark</th></tr><tr><td>Green</td><td>0</td><td>Default</td></tr><tr><td>Red</td><td>1</td><td></td></tr><tr><td>Blue</td><td>2</td><td></td></tr></table> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>AE mode (including TS)</td><td>AE mode lamp</td><td>0</td></tr><tr><td>TEXT mode (including TS)</td><td>TEXT mode lamp</td><td>0</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td><td>0</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Set value	Colors easy to be copied	Colors difficult to be copied	0	Purple, Blue, Red	Yellow, Green, Water blue	1	Water blue, Green, Blue	Purple, Red, Yellow	2	Yellow, Red, Green	Blue, Water blue, Purple	Specification component	Setting No	Remark	Green	0	Default	Red	1		Blue	2		Mode	Display lamp	Default	AE mode (including TS)	AE mode lamp	0	TEXT mode (including TS)	TEXT mode lamp	0	PHOTO mode	PHOTO mode lamp	0
Set value	Colors easy to be copied	Colors difficult to be copied																																					
0	Purple, Blue, Red	Yellow, Green, Water blue																																					
1	Water blue, Green, Blue	Purple, Red, Yellow																																					
2	Yellow, Red, Green	Blue, Water blue, Purple																																					
Specification component	Setting No	Remark																																					
Green	0	Default																																					
Red	1																																						
Blue	2																																						
Mode	Display lamp	Default																																					
AE mode (including TS)	AE mode lamp	0																																					
TEXT mode (including TS)	TEXT mode lamp	0																																					
PHOTO mode	PHOTO mode lamp	0																																					

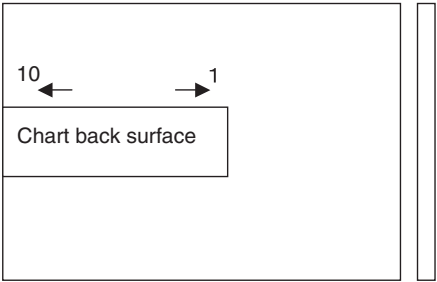
Main code	Sub code	Contents	Details of function/operation																																																												
48	01	Front/rear (main scanning) direction and scan (sub scanning) direction magnification ratio adjustment	<p><b>[Function]</b> Used to adjust the magnification ratio in the main scan (front/rear) direction and sub scan direction.</p> <p>Enter the adjustment value with [▲] [▲] key. Press [START] key to save the set value and make a copy. (When the adjustment value is increased by 1, the magnification ratio is increased by 0.1%.)</p> <p>The adjustment mode can be changed by pressing [Exposure mode selector] key. (Adjustment range: 1 – 99, Default: 50)</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>Main scan direction magnification ratio</td><td>TEXT mode lamp</td><td>50</td></tr><tr><td>OC mode sub scan direction magnification ratio</td><td>PHOTO mode lamp</td><td>50</td></tr></table>	Mode	Display lamp	Default	Main scan direction magnification ratio	TEXT mode lamp	50	OC mode sub scan direction magnification ratio	PHOTO mode lamp	50																																																			
	Mode	Display lamp	Default																																																												
Main scan direction magnification ratio	TEXT mode lamp	50																																																													
OC mode sub scan direction magnification ratio	PHOTO mode lamp	50																																																													
05	SPF mode sub scan direction magnification ratio in copying (Option)	<p><b>[Function]</b> Used to display the current SPF mode sub scan direction magnification ratio on the LED/display.</p> <p>When [START] key is pressed, the entered data is acquired and saved into the EEPROM, and a copy is made. (When the set value is increased by 1, the magnification ratio is increased by 0.1%.)</p> <p>The adjustment mode can be changed by pressing [Exposure mode selector] key. (Adjustment range: 1 – 99, Default: 50)</p> <p>For printing, regardless of the density mode and the density level, Density mode = TEXT Density level = 3</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>Sub scan magnification ratio adjustment on the front surface of SPF document</td><td>AE mode lamp</td><td>50</td></tr></table> <p>* When there is no document in SPF, copy is inhibited.</p> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Default	Sub scan magnification ratio adjustment on the front surface of SPF document	AE mode lamp	50																																																							
Mode	Display lamp	Default																																																													
Sub scan magnification ratio adjustment on the front surface of SPF document	AE mode lamp	50																																																													
49	01	Flash ROM program writing mode	<p><b>[Function]</b> When this simulation is executed, "d" is displayed on the display, the machine goes into the program writing mode from PC to Flash ROM.</p> <p>Use the writing tool on the PC and write the program.</p> <p>During writing, the display shows as follows: After completion of download, turn OFF/ON the power to reset.</p> <table><tr><th>Status</th><th>Display</th><th>Pre-heat lamp</th><th>Ready lamp</th><th>Remark</th></tr><tr><td>Download data receiving</td><td>"d" ON</td><td>ON</td><td>OFF</td><td></td></tr><tr><td>Date delete start</td><td>"d" ON</td><td>OFF</td><td>ON</td><td></td></tr><tr><td>Data write (Boot section)</td><td>"d" ON</td><td>Blink</td><td>OFF</td><td></td></tr><tr><td>Data write (Program section)</td><td>"d" ON</td><td>Blink</td><td>Blink</td><td></td></tr><tr><td>During SUM CHECK</td><td>"d" ON</td><td>ON</td><td>ON</td><td></td></tr><tr><td>Download complete</td><td>"0FF" ON</td><td>OFF</td><td>OFF</td><td></td></tr><tr><td>Error state</td><td>"E *" ON</td><td>OFF</td><td>OFF</td><td></td></tr></table> <p>* "*" in an error display indicates the error position.</p> <table><tr><td>1</td><td>Data reception error</td><td>6</td><td>Sum check (Loader section)</td></tr><tr><td>2</td><td>Loader function transfer</td><td>7</td><td>Sum check (Boot section)</td></tr><tr><td>3</td><td>FLASH ROM delete</td><td>8</td><td>Sum check (Program section)</td></tr><tr><td>4</td><td>FLASH ROM writing (Boot section)</td><td>9</td><td>Sum check (EEPROM section)</td></tr><tr><td>5</td><td>FLASH ROM writing (Program section)</td><td>10</td><td>Data error</td></tr></table> <p>To enter the download mode, there is a method to use key operations as well as to use a simulation. With the power OFF, press and hold [Exposure mode select] key + [ZOOM DOWN] key, turn on the power.</p>	Status	Display	Pre-heat lamp	Ready lamp	Remark	Download data receiving	"d" ON	ON	OFF		Date delete start	"d" ON	OFF	ON		Data write (Boot section)	"d" ON	Blink	OFF		Data write (Program section)	"d" ON	Blink	Blink		During SUM CHECK	"d" ON	ON	ON		Download complete	"0FF" ON	OFF	OFF		Error state	"E *" ON	OFF	OFF		1	Data reception error	6	Sum check (Loader section)	2	Loader function transfer	7	Sum check (Boot section)	3	FLASH ROM delete	8	Sum check (Program section)	4	FLASH ROM writing (Boot section)	9	Sum check (EEPROM section)	5	FLASH ROM writing (Program section)	10	Data error
Status	Display	Pre-heat lamp	Ready lamp	Remark																																																											
Download data receiving	"d" ON	ON	OFF																																																												
Date delete start	"d" ON	OFF	ON																																																												
Data write (Boot section)	"d" ON	Blink	OFF																																																												
Data write (Program section)	"d" ON	Blink	Blink																																																												
During SUM CHECK	"d" ON	ON	ON																																																												
Download complete	"0FF" ON	OFF	OFF																																																												
Error state	"E *" ON	OFF	OFF																																																												
1	Data reception error	6	Sum check (Loader section)																																																												
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5	FLASH ROM writing (Program section)	10	Data error																																																												

Main code	Sub code	Contents	Details of function/operation																								
50	01	Lead edge image position	<p><b>[Function]</b></p> <p>Used to adjust the copy image position and the lead edge void amount on copy paper. The adjustment is made by adjusting the image scan start position at 100% and the print start position (resist roller ON timing). When this simulation is executed, the current set value is displayed in 2 digits. (Center value: 50)</p> <p>When [Exposure mode selector] key is pressed, the setting mode and the display are changed. Enter the adjustment value and press [START] key to save the set value and make a copy.</p> <p>When the adjustment is made by the main cassette paper feed, the adjustment values of all the paper feed ports become the same. (When the set value is increased by 1, shift is made by 0.1mm.)</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>Print start position (Main cassette paper feed)</td><td>AE mode lamp Main cassette lamp</td><td>50</td></tr><tr><td>Print start position (2nd cassette paper feed)</td><td>AE mode lamp 2nd cassette lamp</td><td>50</td></tr><tr><td>Print start position (Manual paper feed)</td><td>AE mode lamp Manual feed lamp</td><td>50</td></tr><tr><td>Image lead edge void amount</td><td>TEXT mode lamp Main cassette lamp</td><td>50</td></tr><tr><td>Image scan start position</td><td>PHOTO mode lamp Main cassette lamp</td><td>50</td></tr><tr><td>Image rear edge void amount (Cassette paper feed)</td><td>AE mode lamp TEXT mode lamp PHOTO mode lamp Main cassette lamp</td><td>50</td></tr><tr><td>Image rear edge void</td><td>AE mode lamp</td><td>50</td></tr></table> <p>* When printing with the manual paper feed tray, use paper of the letter size.</p> <p><b>[Adjustment procedure]</b></p> <p>1) Set the print start position (AE lamp ON) (A), the lead edge void amount (TEXT lamp ON) (B), and the scan start position (PHOTO lamp ON) (C) to 0, and make a copy of a scale at 100%.</p> <p>2) Measure the image loss (Rmm) of the scale. Set C = 10 x R (mm). (Example: Set to 40.) When the value of C is increased by 10, the image loss is decreased by 1mm. (Default: 50)</p> <p>3) Measure the distance (Hmm) from the paper lead edge to the image print start position. Set A = 10 x H (mm). (Example: Set to 50.) When the value of A is increased by 10, the image lead edge is moved to the paper lead edge by 1mm. (Default: 50).</p> <p>4) Set the lead edge void amount to B = 50 (2.5mm). (Default: 50) (Example)</p> <p>When the value of B is increased by 10, the void is extended by about 0.1mm. (For 25 or less, however, the void amount is regarded as 0.)</p> <p>* The SPF adjustment is made by adjusting the SPF image scan start position after OC adjustment.</p> <p><b>[Operation]</b></p> <p>The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Default	Print start position (Main cassette paper feed)	AE mode lamp Main cassette lamp	50	Print start position (2nd cassette paper feed)	AE mode lamp 2nd cassette lamp	50	Print start position (Manual paper feed)	AE mode lamp Manual feed lamp	50	Image lead edge void amount	TEXT mode lamp Main cassette lamp	50	Image scan start position	PHOTO mode lamp Main cassette lamp	50	Image rear edge void amount (Cassette paper feed)	AE mode lamp TEXT mode lamp PHOTO mode lamp Main cassette lamp	50	Image rear edge void	AE mode lamp	50
Mode	Display lamp	Default																									
Print start position (Main cassette paper feed)	AE mode lamp Main cassette lamp	50																									
Print start position (2nd cassette paper feed)	AE mode lamp 2nd cassette lamp	50																									
Print start position (Manual paper feed)	AE mode lamp Manual feed lamp	50																									
Image lead edge void amount	TEXT mode lamp Main cassette lamp	50																									
Image scan start position	PHOTO mode lamp Main cassette lamp	50																									
Image rear edge void amount (Cassette paper feed)	AE mode lamp TEXT mode lamp PHOTO mode lamp Main cassette lamp	50																									
Image rear edge void	AE mode lamp	50																									



Main code	Sub code	Contents	Details of function/operation												
50	06	Copy lead edge position adjustment (SPF) (Option)	<p><b>[Function]</b> Used to adjust the SPF copy lead edge.</p> <p>When the adjustment value of the document scan position adjustment is increased by 1, the scan start timing is advanced by 0.1mm.</p> <p>The print result is shifted to the opposite direction of the scan start position.</p> <p>The adjustment mode can be changed by pressing [Exposure mode selector] key. (Adjustment range: 1 – 99, Default: 50)</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>Front surface document scan position adjustment</td><td>AE mode lamp</td><td>50</td></tr><tr><td>Rear edge void adjustment (SPF)</td><td>PHOTO mode lamp</td><td>50</td></tr></table> <p>* When there is no document in the SPF, copy is inhibited.</p> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Default	Front surface document scan position adjustment	AE mode lamp	50	Rear edge void adjustment (SPF)	PHOTO mode lamp	50			
Mode	Display lamp	Default													
Front surface document scan position adjustment	AE mode lamp	50													
Rear edge void adjustment (SPF)	PHOTO mode lamp	50													
	10	Center offset adjustment	<p><b>[Function]</b> Used to adjust the center offset position of copy images on copy paper and that in scanning document.</p> <p>When this simulation is executed, the current set value is displayed.</p> <p>Enter the adjustment value and press [START] key to save the setting and make a copy. (When the set value is changed by 1, the center is shifted by 0.1mm.)</p> <p>When the adjustment value is increased, the center is shifted to right. When decreased, the center is shifted to left.</p> <p>The modes can be selected by pressing [Exposure mode selector] key.</p> <p>When the set value is changed largely, the area outside the shading area may be scanned to cause black streaks on the edges.</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>Print center offset (Main cassette paper feed)</td><td>AE mode lamp Main cassette lamp</td><td>50</td></tr><tr><td>Print center offset (2nd cassette paper feed)</td><td>AE mode lamp 2nd cassette lamp</td><td>50</td></tr><tr><td>Print center offset (Manual paper feed)</td><td>AE mode lamp Manual paper feed lamp</td><td>50</td></tr></table> <p>* When printing with the manual paper feed tray, use paper of the letter size.</p> <p>* In the 2nd print center offset adjustment, print is made forcibly as 1to2/Short Edge from OC regardless of duplex setting.</p> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Default	Print center offset (Main cassette paper feed)	AE mode lamp Main cassette lamp	50	Print center offset (2nd cassette paper feed)	AE mode lamp 2nd cassette lamp	50	Print center offset (Manual paper feed)	AE mode lamp Manual paper feed lamp	50
Mode	Display lamp	Default													
Print center offset (Main cassette paper feed)	AE mode lamp Main cassette lamp	50													
Print center offset (2nd cassette paper feed)	AE mode lamp 2nd cassette lamp	50													
Print center offset (Manual paper feed)	AE mode lamp Manual paper feed lamp	50													
	12	Document off-center adjustment	<p><b>[Function]</b> Used to adjust document scan off-center adjustment.</p> <p>The adjustment modes can be selected by pressing [Exposure mode selector] key. (Adjustment range: 1 – 99, Default: 50)</p> <p>When the adjustment value is increased, the print result is shifted to left.</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>Platen document scan</td><td>AE mode lamp</td><td>50</td></tr><tr><td>SPF document front scan</td><td>TEXT mode lamp</td><td>50</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Default	Platen document scan	AE mode lamp	50	SPF document front scan	TEXT mode lamp	50			
Mode	Display lamp	Default													
Platen document scan	AE mode lamp	50													
SPF document front scan	TEXT mode lamp	50													

Main code	Sub code	Contents	Details of function/operation												
51	02	Resist quantity adjustment	<p><b>[Function]</b> Used to adjust the contact pressure of the main unit resist roller and the SPF resist roller onto paper. When this simulation is executed, the current set value is displayed.</p> <p>The adjustment modes can be selected by pressing [Exposure mode selector] key.</p> <p>Enter the adjustment value with [▲] [▲] key and press [START] key to save the set value and make a copy.</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>Main cassette paper feed</td><td>AE mode lamp Main cassette lamp</td><td>50</td></tr><tr><td>2nd cassette paper feed</td><td>AE mode lamp 2nd cassette lamp</td><td>50</td></tr><tr><td>Manual paper feed</td><td>AE mode lamp Manual paper feed lamp</td><td>50</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01.</p>	Mode	Display lamp	Default	Main cassette paper feed	AE mode lamp Main cassette lamp	50	2nd cassette paper feed	AE mode lamp 2nd cassette lamp	50	Manual paper feed	AE mode lamp Manual paper feed lamp	50
Mode	Display lamp	Default													
Main cassette paper feed	AE mode lamp Main cassette lamp	50													
2nd cassette paper feed	AE mode lamp 2nd cassette lamp	50													
Manual paper feed	AE mode lamp Manual paper feed lamp	50													
53	08	SPF scan position automatic adjustment (Option)	<p><b>[Function]</b> Place a A4 paper (white chart) so that it covers the SPF scan glass and the OC glass together, and close the SPF.</p> <p>When this simulation is executed, the current adjustment value is displayed as the initial display.</p> <p>* Default is 50. Adjustment range is 1 – 99. Adjustment unit 1 = about 0.127mm</p> <p>In case of AUTO, press [START] key, and the mirror unit scans from the home position to the SPF scan position with the adjustment value displayed. The SPF glass cover edge position is calculated from the difference between the SPF glass cover edge and the OC side document glass CCD output level. If the adjustment is normal, the adjusted value is displayed. If abnormal, the JAM LED lights up with the current set value displayed.</p> <p>During the JAM LED is lighted, when [START] key is pressed again, execution is performed again.</p> <table><tr><th>Mode</th><th>Display lamp</th><th>Default</th></tr><tr><td>SPF scan position auto adjustment</td><td>AE mode lamp</td><td>50</td></tr><tr><td>SPF scan position manual adjustment</td><td>TEXT mode lamp</td><td>50</td></tr></table> <p><b>[Operation]</b> The operation is similar to simulation 46-01. (In MANUAL)</p>	Mode	Display lamp	Default	SPF scan position auto adjustment	AE mode lamp	50	SPF scan position manual adjustment	TEXT mode lamp	50			
Mode	Display lamp	Default													
SPF scan position auto adjustment	AE mode lamp	50													
SPF scan position manual adjustment	TEXT mode lamp	50													
61	03	Polygon motor check (HSYNC output check)	<p><b>[Function]</b> When [START] key is pressed, HSYNC is performed and the polygon motor is rotated for 30sec. At that time, the ZOOM lamp is lighted for 100msec every time when HSYNC is detected.</p> <p>The sub code display is lighted. (After completion of execution, it blinks.)</p>												
63	01	Shading check	<p><b>[Function]</b> Used to display the detection level of white plate for shading.</p> <p>When [START] key is pressed, the mirror base unit moves to the white plate for shading and the copy lamp is lighted.</p> <p>When the light quantity is stabilized, revision is made for every second, and the level of one pixel at the center of CCD which is not corrected is detected and the value is displayed in decimal values on the LED.</p>												

Main code	Sub code	Contents	Details of function/operation
63	02	Black level automatic correction	<p><b>[Function]</b> Used to acquire the black level target value used for the black level adjustment of white balance. When this simulation is executed, the current correction value is displayed in 3 digits of 12bit hexadecimal number.</p> <p>Place the gray gradation chart (UKOG-0162FCZZ) used as the correction document so that the density 10 (black side) comes on the left side and that the chart is upside down at the center of the plate left center.</p>  <p>When [START] key is pressed, the mirror base unit scans the chart and calculates the correction value.</p> <p>After completion of correction, the corrected value is displayed on the LED/display.</p> <ul style="list-style-type: none"> <li>* Default: 0</li> <li>* If the value is set to the default, operation is made with 0x60.</li> <li>* In case of an error, the JAM lamp lights up.</li> <li>* If C key is pressed during canceling, the machine goes into the sub code entry standby mode after canceling.</li> </ul>
	12	Light quantity stabilization wait time setting	<p><b>[Function]</b> Used to set the wait time before entering the light quantity level stable evaluation process in the light quantity stable process of white balance. (Note: The light quantity stable level in the previous light quantity stable state is used as the target. When the light quantity level reaches the target during the wait time, the set time of this simulation is ignored and the operation enters the stable evaluation process.)</p> <p>When this simulation is executed, the currently set value is displayed.</p> <p>Enter the adjustment value with [▲] [▲] key and press [START] key. The entered value is stored and the machine goes into the sub code entry standby mode.</p> <p>Setting range: 0 – 99 (Complying with the light quantity stable wait time of 0 – 99sec.)</p> <p>Default: 15 (15sec)</p> <p><b>[Operation]</b> The operation is similar to simulation 9-04.</p>
	13	Light quantity stabilization band setting	<p><b>[Function]</b> When the difference between the maximum and the minimum values of the light quantity level sampled for 3.2sec in the cycle of 100msec in the white balance light quantity stable process is within the range set with this simulation, it is judged as the light quantity is stable. (Note: The magnification ratio of the AFE gain setting is automatically reflected on the stable width.)</p> <p>When this simulation is executed, the currently set value is displayed.</p> <p>Enter the adjustment value with [▲] [▲] key and press [START] key. The entered value is stored and the machine goes into the sub code entry standby mode.</p> <p>Setting range: 1 – 99 (Light quantity stable width: Complying with 1 – 99 in 4095 gradations.)</p> <p>Default: 16</p> <p><b>[Operation]</b> The operation is similar to simulation 9-04.</p>

Main code	Sub code	Contents	Details of function/operation															
64	01	Self print	<p><b>[Function]</b></p> <p>The status of the optical section is ignored and printing of one page is made. Also when the print command is received from the host, printing is made.</p> <p>When this simulation is executed, warm-up is performed and the ready lamp is lighted. (Since, however, the scanner is disabled, initializing is not made.)</p> <p>Enter the code number and press [START] key to start paper feed from the selected cassette and print in the selected pattern.</p> <table><tr><th>Code number</th><th>Pattern</th><th>Display item</th></tr><tr><td>0</td><td>1by2</td><td>1 BY 2</td></tr><tr><td>1</td><td>Grid pattern</td><td>CHECK</td></tr><tr><td>2</td><td>White paper</td><td>WHITE</td></tr><tr><td>3</td><td>Black background</td><td>BLACK</td></tr></table> <p>* For 4 – 99, flip.</p> <p><b>[Operation]</b></p> <p>The operation is similar to simulation 26-02.</p>	Code number	Pattern	Display item	0	1by2	1 BY 2	1	Grid pattern	CHECK	2	White paper	WHITE	3	Black background	BLACK
Code number	Pattern	Display item																
0	1by2	1 BY 2																
1	Grid pattern	CHECK																
2	White paper	WHITE																
3	Black background	BLACK																

## 5. Trouble codes

### A. Trouble codes list

Main code	Sub code	Details of trouble
E7	01	Image data error
	06	Image data decode error
	10	Shading trouble (Black correction)
	11	Shading trouble (White correction)
	16	Abnormal laser output
	20	LSU trouble
F2	64	Toner supply abnormality
	70	Improper cartridge
	74	Toner cartridge CRUM error
F5	02	Copy lamp lighting abnormality
H2	00	Thermistor open
H3	00	Heat roller high temperature detection
H4	00	Heat roller low temperature detection
L1	00	Feeding is not completed within the specified time after starting feeding.
L3	00	Scanner return trouble
L4	01	Main motor lock detection
	31	Exhaust fan motor lock detection trouble
L6	10	Polygon motor lock detection
	00	EEPROM read/write error (Serial communication error)
U2	11	Counter check sum error (EEPROM)

### B. Details of trouble codes

Main code	Sub code	Details of trouble	
E7	01	Content	Image data error
		Detail	Communication error with the E-sort module MCU PWB trouble ASIC trouble
		Check and remedy	Check if it occurs again when the power is turned OFF and ON. If so, replace the PWB.
	06	Content	Image data decode error
		Detail	Image expansion error
		Cause	MCU PWB abnormality USB cable trouble
	10	Check and remedy	Replace the MCU PWB. Replace the USB cable.
		Content	Shading trouble (Black correction)
		Detail	The CCD black scan level is abnormal when the shading.
	11	Cause	Improper connection of the CCD unit flat cable CCD unit abnormality MCU PWB abnormality
		Check and remedy	Check connection of the CCD unit flat cable. Check the CCD unit.
		Content	Shading trouble (White correction)
		Detail	The CCD white scan level is abnormal when the shading.
		Cause	Improper connection of the CCD unit flat cable Dirt on the mirror, the lens, and the reference white plate Copy lamp lighting abnormality CCD unit abnormality MCU PWB abnormality (When occurred in the SPF scan position.) Improper installation of the mirror unit
		Check and remedy	Clean the mirror, lens, and the reference white plate. Check the light quantity and lighting status of the copy lamp (SIM 05-03). Check the MCU PWB.

Main code	Sub code	Details of trouble	
E7	16	Content	Abnormal laser output
		Detail	When the laser output is stopped, HSYNC is detected.
		Cause	Laser abnormality MCU PWB abnormality.
		Check and remedy	Check the laser emitting diode operation. Replace the MCU PWB.
	20	Content	LSU trouble
		Detail	The BD signal from the LSU cannot be detected in a certain cycle. (Always OFF or always ON)
		Cause	LSU connector or LSU harness defect or disconnection Polygon motor rotation abnormality Laser beams are not generated. MCU PWB abnormality.
		Check and remedy	Check connection of the LSU connector. Execute SIM 61-03 to check the LSU operations. Check that the polygon motor rotates normally. Check that the laser emitting diode generates laser beams. Replace the LSU unit. Replace the MCU PWB.
	64	Content	Toner supply abnormality
		Detail	The maximum toner supply time is greatly exceeded.
		Cause	CRUM chip trouble Improper developing unit
		Check and remedy	Replace the CRUM chip. Replace the developing unit.
F2	70	Content	Improper cartridge
		Detail	The destination of the main unit differs from that of the CRUM. When the life cycle information is other than Not Used (FFh).
		Cause	CRUM chip trouble Improper developing unit
		Check and remedy	Replace the CRUM chip. Replace the developing unit.
	74	Content	Toner cartridge CRUM error
		Detail	MCU
		Cause	Toner cartridge (CRUM) trouble. MCU PWB trouble. Connector/harness trouble.
		Check and remedy	Replace the toner cartridge. Replace the MCU PWB. Connector and harness check.

Main code	Sub code	Details of trouble	
F5	02	Content	Copy lamp lighting abnormality
		Detail	The copy lamp does not turn on.
		Cause	Copy lamp abnormality Copy lamp harness abnormality CCD PWB harness abnormality.
		Check and remedy	Use SIM 5-3 to check the copy lamp operations. <b>When the copy lamp lights up.</b> Check the harness and the connector between the CCD unit and the MCU PWB. <b>When the copy lamp does not light up.</b> Check the harness and the connector between the copy lamp unit and the MCU PWB. Replace the copy lamp unit. Replace the MCU PWB.
H2	00	Content	Thermistor open
		Detail	The thermistor is open. The fusing unit is not installed.
		Cause	Thermistor abnormality Control PWB abnormality Fusing section connector disconnection The fusing unit is not installed.
		Check and remedy	Check the harness and the connector between the thermistor and the PWB. Use SIM 14 to clear the self diagnostic display.
H3	00	Content	Heat roller high temperature detection
		Detail	The fusing temperature exceeds 240°C.
		Cause	Thermistor abnormality Control PWB abnormality Fusing section connector disconnection.
		Check and remedy	Use SIM 5-02 to check the heater lamp blinking operation. <b>When the lamp blinks normally.</b> Check the thermistor and its harness. Check the thermistor input circuit on the control PWB. <b>When the lamp keeps ON.</b> Check the power PWB and the lamp control circuit on the MCU PWB. Use SIM 14 to clear the self diagnostic display.

Main code	Sub code	Details of trouble	
H4	00	Content	Heat roller low temperature detection
		Detail	1) When the target temperature (165°C) is not reached in 55 sec after starting warming-up. 2) When the temperature below 100°C is detected for 300ms under the ready print state. * "Starting warming-up" means not only that in power supply but also reset that in reset from shut-off and in side door close. (The timing of generating H4 is not limited to that in power supply.)
		Cause	Thermistor abnormality Heater lamp abnormality Thermostat abnormality Control PWB abnormality
		Check and remedy	Use SIM 5-02 to check the heater lamp blinking operation. <b>When the lamp blinks normally.</b> Check the thermistor and its harness. Check the thermistor input circuit on the control PWB. <b>When the lamp does not light up.</b> Check for disconnection of the heater lamp and the thermostat. Check the interlock switch. Check the power PWB and the lamp control circuit on the MCU PWB. Use SIM 14 to clear the self diagnostic display.
L1	00	Content	Feeding is not completed within the specified time after starting feeding. (The scan head locking switch is locked)
		Detail	The white area and the black marking on the shading plate are used to obtain the difference in the CCD level values for judgment of lock. When the difference in the levels of which and black is small, it is judged that the black mark could not be scanned by lock and the trouble code "L1" is displayed.
		Cause	The scan head is locked by the lock switch. Mirror unit abnormality The scanner wire is disconnected. The origin detection sensor abnormality Mirror motor harness abnormality
		Check and remedy	Check to confirm that the scan head lock switch is released. Use SIM 1-1 to check the mirror reciprocating operations. <b>When the mirror does not feed.</b> Check for disconnection of the scanner wire. Check the harness and the connector between the mirror motor and the MCU PWB. Replace the mirror unit. Replace the MCU PWB. <b>When the mirror does feed.</b> Use SIM 1-2 to check the mirror home position sensor.

Main code	Sub code	Details of trouble	
L3	00	Content	Scanner return trouble
		Detail	When the mirror base is returned for the specified time (6 sec) in mirror initializing after turning on the power, the mirror home position sensor (MHPS) does not turn ON. Or when the mirror base is returned for the specified time (about 6 sec) after start of copy return, the mirror home position sensor (MHPS) does not turn ON.
		Cause	Mirror unit abnormality Scanner wire disconnection Origin detection sensor abnormality Mirror motor harness abnormality
		Check and remedy	Use SIM 1-1 to check the mirror reciprocating operations. <b>When the mirror does not return.</b> Check for disconnection of the scanner wire. Check the harness and the connector between the mirror motor and the MCU PWB. Replace the mirror unit. Replace the MCU PWB. <b>When the mirror does feed.</b> Use SIM 1-2 to check the mirror home position sensor.
L4	01	Content	Main motor lock detection
		Detail	When the main motor encoder pulse is not detected for 100 msec.
		Cause	Main motor unit abnormality Improper connection or disconnection the main motor and the harness. MCU PWB abnormality
	31	Check and remedy	Use SIM 25-01 to check the main motor operations. Check connection of the main motor harness/connector. Replace the main motor. Replace the MCU PWB.
		Content	Exhaust fan motor lock detection trouble
		Detail	The error detection is started after 2 sec from starting rotation of the exhaust fan motor. 1) The continuous rotation state of 250ms is not detected for 1 sec after starting detection. 2) When the lock sensor (in the exhaust fan) detects the HIGH level (unstable) after detection the lock state (stable state).
		Cause	Exhaust fan motor connector connection trouble Exhaust fan motor trouble MCU PWB trouble
		Check and remedy	Exhaust fan motor connector connection check Exhaust fan motor replacement Replace the MCU PWB.



Main code	Sub code	Details of trouble	
L6	10	Content	Polygon motor lock detection
		Detail	The lock signal (specified rpm signal) does not return within a certain time (about 20 sec) from starting the polygon motor rotation.
		Cause	Polygon motor unit abnormality Improper connection or disconnection of the polygon motor and the harness. MCU PWB abnormality
		Check and remedy	Use SIM 25-10 to check the polygon motor operations. Check connection of the polygon motor harness/connector. Replace the polygon motor. Replace the MCU PWB.
U2	00	Content	EEPROM read/write error (Serial communication error)
		Detail	EEPROM access process error
		Cause	EEPROM abnormality
		Check and remedy	Check that the EEPROM is properly set. Use SIM 16 to cancel the trouble. Replace the MCU PWB.
	11	Content	Counter check sum error (EEPROM)
		Detail	Check sum error of the counter area in the EEPROM
		Cause	EEPROM abnormality
		Check and remedy	Check that the EEPROM is properly set. Use SIM 16 to cancel the trouble. Replace the MCU PWB.

# [11] MAINTENANCE

## 1. Maintenance table

× : Check (Clean, adjust, or replace when required.) ○ : Clean ▲ : Replace △ : Adjust ☆ : Lubricate

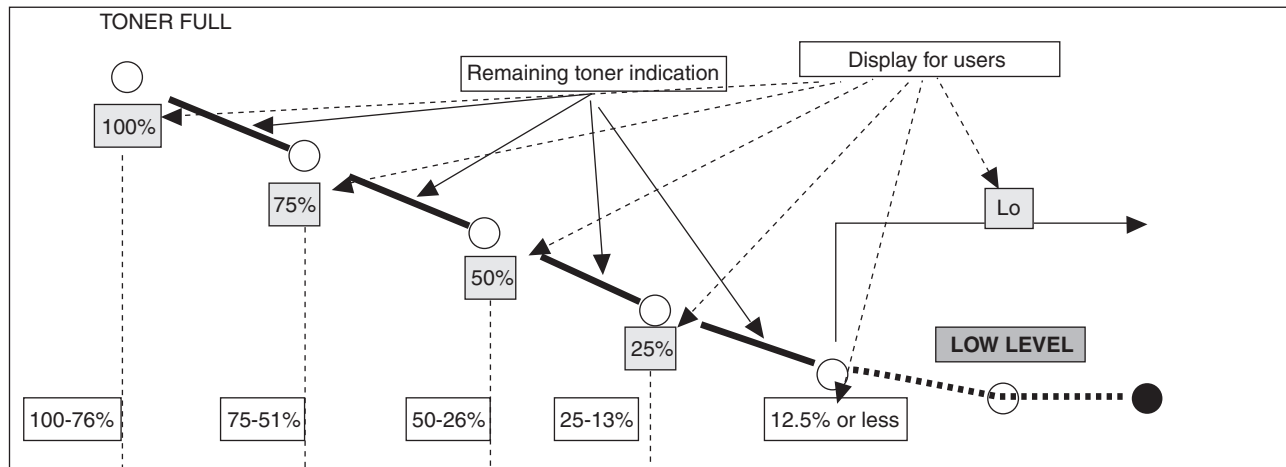
Section	Parts	25K	50K	75K	100K	125K	Remark
Developing	Developer	▲	▲	▲	▲	▲	
	DV blade	○	▲	○	▲	○	
	DV side seal (F/R)	○	▲	○	▲	○	
	DV doctor	×	×	×	×	×	White streaks are made on the image.
Process peripheral	Drum	▲	▲	▲	▲	▲	

## 2. Maintenance display system

Toner	Life	8K	
	Remaining quantity	NEAR EMPTY About 12.5%	EMPTY
	LED	ON	Flash
	Machine	Operation allowed	Stop
Developer	Life	25K	
	LED	ON at 25K of the developer count.	
	Machine	Selection is available between Not Stop and Stop by Service Simulation (SIM 26-37) Setup. (If Stop is selected, the LED will flash and stop at 25K.) * Default: Not Stop * Clear: SIM 24-06	
Maintenance	LED	Selection is available among 25K, 13K, 9K, 6K, 3K, and free (no lighting) with SIM 21-1. * Default: 25K * Clear: SIM 20-1	
	Machine	Not stop.	

Note: When developer is replaced, be sure to execute simulation No. 24-06 to reset the counter.

## 3. Remaining toner indication











- The remaining toner indication is based on the number of revolutions of the toner motor.
- The toner END indication appears when the END is detected by the toner sensor.
- The remaining toner indication is a rough indication of the remaining toner quantity.

# [12] USER PROGRAM



The user programs allow the parameters of certain functions to be set, changed, or cancelled as desired.

## 1. Setting the user programs

- 1) Press and hold down the light (  ) key for more than 5 seconds until all the alarm indicators ( , , ,  ) blink and " --- " appears in the display.
- 2) Use the left copy quantity (  ) key to select a user program number (For the user program numbers, see the following table.).  
The selected number will blink in the left side of the display.
- 3) Press the start (  ) key. The entered program number will be steadily lit and the currently selected parameter number for the program will blink on the right side of the display.
- 4) Select the desired parameter using the right copy quantity (  ) key.  
The entered parameter number will blink on the right of the display.

Program No.	Mode	Parameters
32	USB 2.0 mode switching	1 → Full-Speed, *2 → Hi-Speed

\* Factory default settings are indicated with an asterisk (\*).

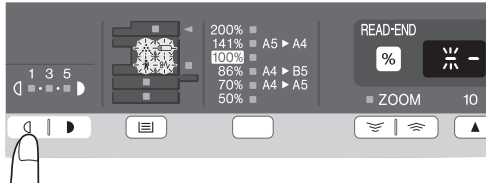
- 5) Press the start (  ) key. The right-hand number in the display will be steadily lit and the entered value will be stored.  
Note: To change the setting or to set another mode, press the clear key. The unit will return to step 2.
- 6) Press the light (  ) key to return to the normal copy mode.

Program No.	Mode	Parameters
1	Auto clear time	1 → 10 sec., 2 → 30 sec., *3 → 60 sec., 4 → 90 sec., 5 → 120 sec., 6 → OFF
2	Preheat mode	*1 → 30 sec., 2 → 60 sec., 3 → 5 min., 4 → 30 min., 5 → 60 min., 6 → 120 min., 7 → 240 min.
3	Auto power shut- off mode	*1 → ON, 2 → OFF
4	Auto power shut- off timer	*1 → 5 min., 2 → 30 min., 3 → 60 min., 4 → 120 min., 5 → 240 min.
6	SPF automatic original discharge time (Only operates when an SPF is installed.)	1 → 5 min., *2 → 30 min., 3 → 60 min., 4 → 120 min., 5 → 240 min., 6 → OFF
10	Resolution of AUTO & MANUAL mode	*1 → 300dpi, 2 → 600dpi
13	Memory for printer	1 → 30%, 2 → 40%, *3 → 50%, 4 → 60%, 5 → 70%
21	Reset factory	1 → YES, *2 → NO
22	Sort auto select	*1 → ON, 2 → OFF
24	Prevention of OC copies when the original cover/ SPF is up function	*1 → ON, 2 → OFF
25	Copy effective paper width setting function (Tray 1)	*1 → Large (LETTER/A4 width), 2 → Small (INVOICE/B5R width)
26	Copy effective paper width setting function (Paper tray)	*1 → Large (LETTER/A4 width), 2 → Small (INVOICE/B5R width)
27	Copy effective paper width setting function (Tray2) (Only operates when a lower paper tray is installed.)	*1 → Large (LETTER/A4 width), 2 → Small (INVOICE/B5R width)
28	Selection of copy start state (Polygon rotation on/off)	*1 → ON, 2 → OFF
29	Fusing temperature setting when the bypass tray is used	1 → Low, *2 → High

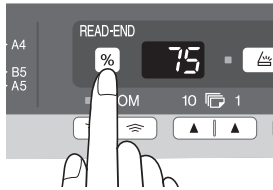
## [13] CHECKING THE TONER LEVEL

The toner level is indicated by a 6-level display. Use it as a guideline for replacing the toner cartridge.

- 1) Hold down the light (☐) key until the alarm indicators (⚠, ⚡, ⚡, ⚡, ⚡) blink.  
The display will show "- -".



- 2) Hold down the Copy ratio display (%) key for more than 5 seconds.  
The approximate quantity of toner remaining will be indicated in the display as a percentage. ("100", "75", "50", "25", "10" is displayed.)  
When the percentage is less than 10%, "LO" will be displayed.



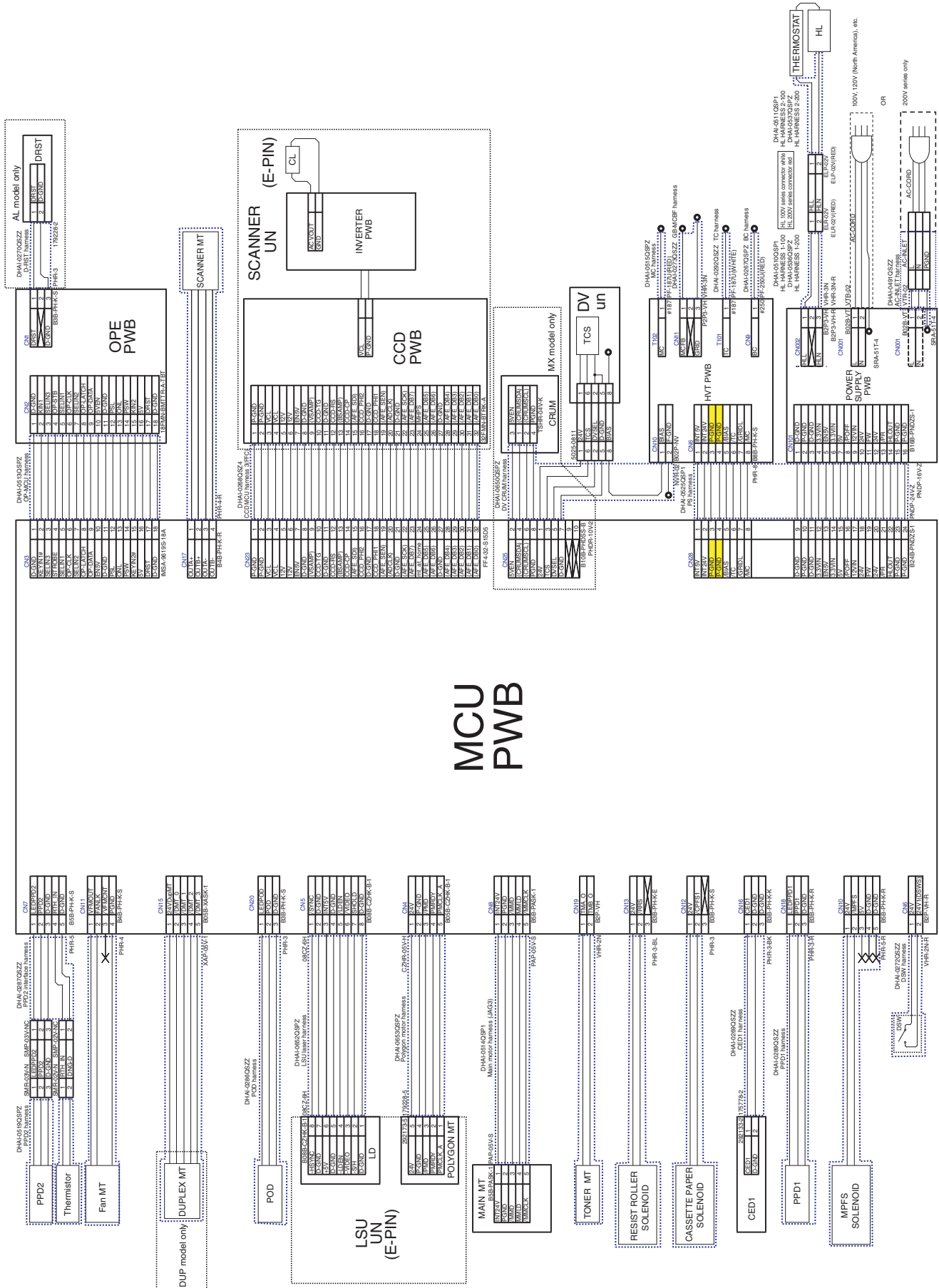
- 3) Press the light (☐) key to return to the normal display.  
The alarm indicators (⚠, ⚡, ⚡, ⚡, ⚡) go off.  
The display returns to the number of copies display.

### A. Overall block diagram



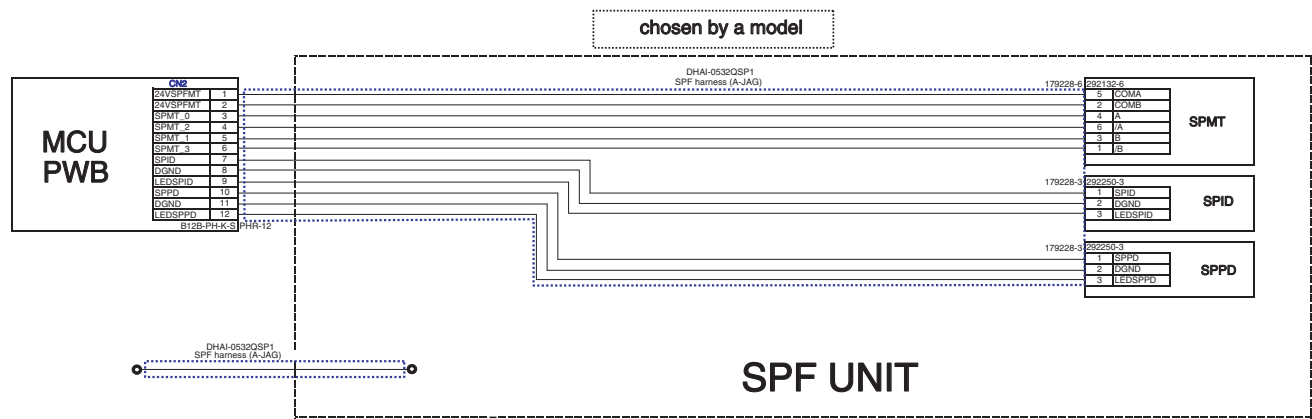
## 2. Actual wiring diagram

### A. MCU PWB

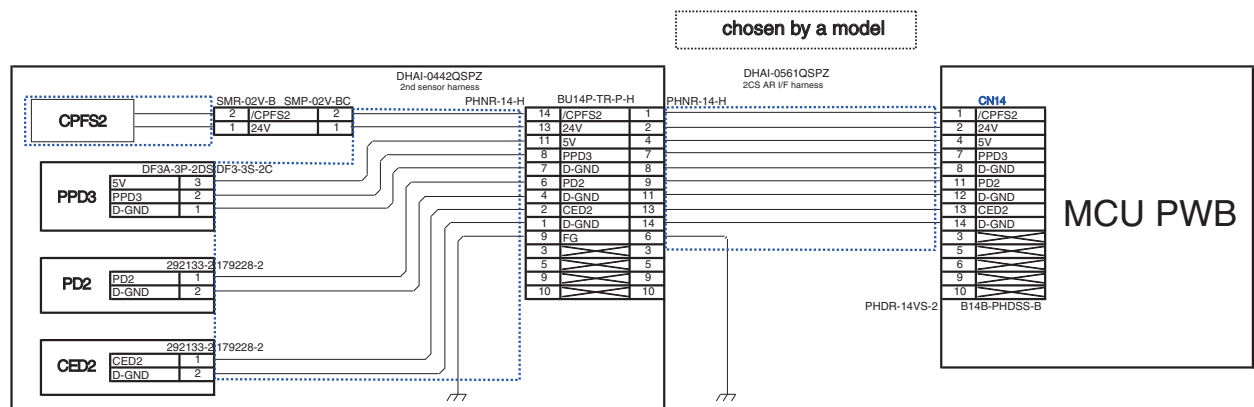




B. SPF unit



C. 2nd cassette unit



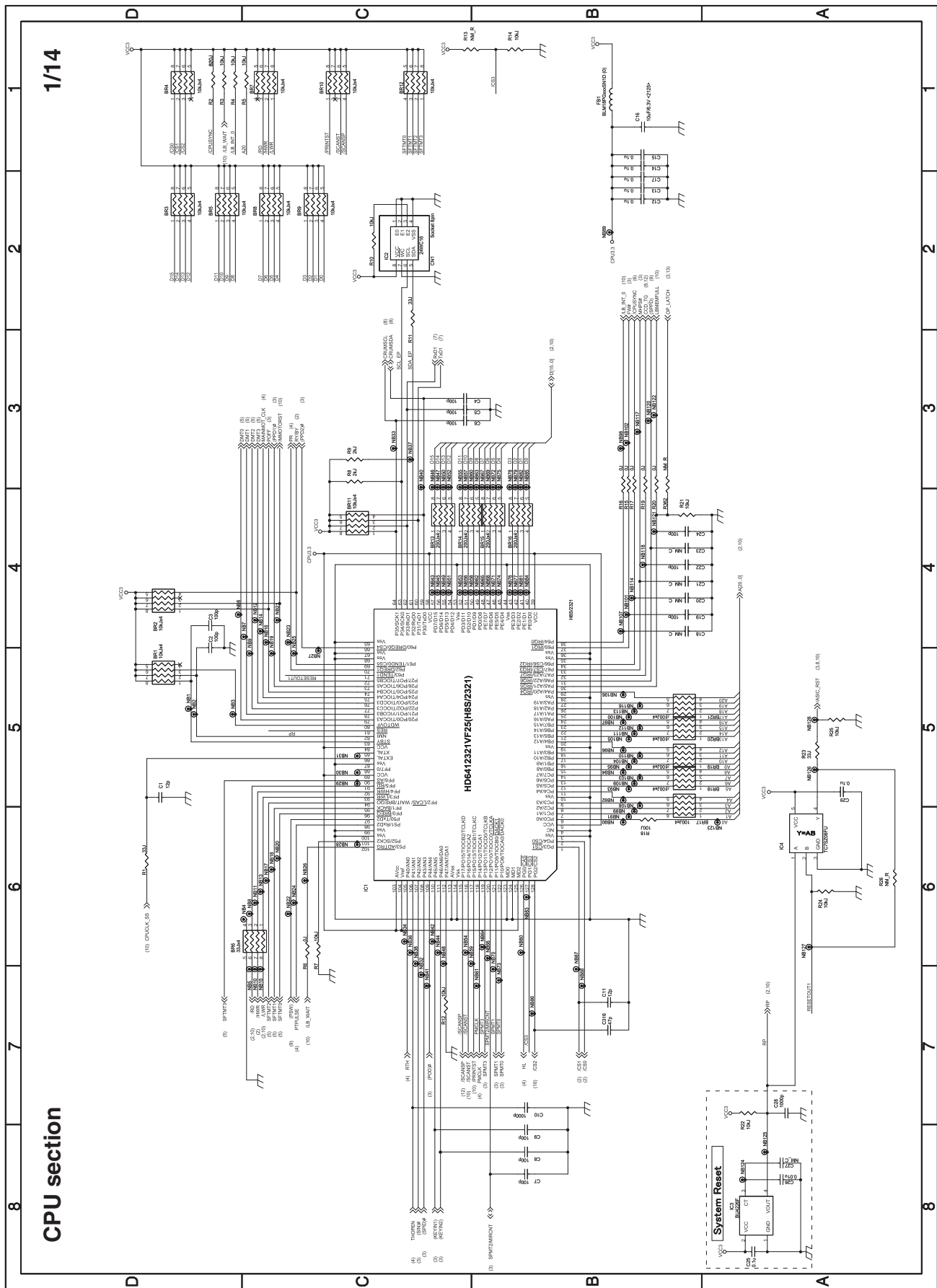
### 3. Signal name list

Signal name	Name	Function/Operation	Section
(ADCLK)	AFE	AFE control signal	Scanner unit section
(AFE_DB0)	AFE	Image scan data	Scanner unit section
(AFE_DB1)	AFE	Image scan data	Scanner unit section
(AFE_DB2)	AFE	Image scan data	Scanner unit section
(AFE_DB3)	AFE	Image scan data	Scanner unit section
(AFE_DB4)	AFE	Image scan data	Scanner unit section
(AFE_DB5)	AFE	Image scan data	Scanner unit section
(AFE_DB6)	AFE	Image scan data	Scanner unit section
(AFE_DB7)	AFE	Image scan data	Scanner unit section
(AFE_SCK)	AFE	AFE control signal	Scanner unit section
(AFE_SDI)	AFE	AFE serial data	Scanner unit section
(AFE_SEN)	AFE	AFE control signal	Scanner unit section
/BIAS	HV bias signal	HV bias drive	Process section
(BSAMP)	AFE	AFE control signal	Scanner unit section
CCD_PHI1	CCD	CCD control signal	Scanner unit section
CCD_PHI2	CCD	CCD control signal	Scanner unit section
CCD-CP	CCD	CCD control signal	Scanner unit section
CCD-RS	CCD	CCD control signal	Scanner unit section
CCD-TG	CCD	CCD control signal	Scanner unit section
CED1	Machine cassette detection		Paper transport section
/CPFS1	1st CS pickup solenoid		Paper transport section
DVSEL	Developing tank detection		Developing section
FANLK	Fusing fan	Fan lock detection signal	Optical section
FW	Low voltage power	Zero cross detection	Power section
/GRIDL	HV grid signal	Main charger grid control	Process section
HLOUT	Heater lamp	Heater lamp control	Power section
KEYIN1#	Key scan input	Key detection control	Operation section
KEYIN2#	Key scan input	Key detection control	Operation section
/LDEN	Laser	Laser circuit control signal	LSU
LEDPOD	POD sensor power		Paper exit section
LEDPPD1	PPD sensor power		Paper transport section
LEDPPD2	PPD2 sensor power		Fusing section
LEDSPID	SPID sensor power		SPF section
LEDSPPD	SPPD sensor power		SPF section
/MC	HV MC signal	Main charger control	Process section
MHPS	MHPS sensor	Carriage HP detection	Optical section
/MMCLK	Main motor	Clock signal to the polygon motor	Main drive section
/MMD	Main motor	Polygon motor drive signal	Main drive section
MMLD	Main motor	Polygon motor ON/OFF detection signal	Main drive section
/MPFS	Multi bypass solenoid		Optical section
ONL	Online LED		Operation section
OP-CLK	LED driver control		Operation section
OP-DATA	LED driver control		Operation section
OP-LATCH	LED driver control		Operation section
OUTA-	Scanner motor	Scanner motor phase control	Optical drive section
OUTA+	Scanner motor	Scanner motor phase control	Optical drive section
OUTB-	Scanner motor	Scanner motor phase control	Optical drive section
OUTB+	Scanner motor	Scanner motor phase control	Optical drive section
PD1	PD SW sensor	1st CS paper width sensor	Not used
PMCLK_A	Polygon motor	Clock signal to the polygon motor	LSU
/PMD	Polygon motor	Polygon motor drive signal	LSU
PMRDY	Polygon motor	Polygon motor ON/OFF detection signal	LSU
POD	POD sensor	Paper transport detection	Paper exit section
/POFF	Low voltage power	Output power control	Power section
PPD1	PPD sensor	Paper transport detection	Paper transport section
PPD2	PPD2 sensor	Paper transport detection	Fusing section
/PR	Heater lamp	Power relay control	Power section
PSL	Power save LED		Operation section
PSW	Start button control		Operation section
/RRS	1st transport solenoid		Paper transport section
RTH_IN	Thermistor	Fusing section thermistor temperature detection	Fusing section
SELIN1	Select signal 1	HC151 select signal	Operation section
SELIN2	Select signal 2	HC151 select signal	Operation section

Signal name	Name	Function/Operation	Section
SELIN3	Select signal 3	HC151 select signal	Operation section
SHOLD	Laser	Laser APC signal	LSU
SPID	SPID sensor	SPF UN paper entry sensor	SPF section
SPMT_0	SPF motor	SPF motor phase control	SPF section
SPMT_1	SPF motor	SPF motor phase control	SPF section
SPMT_2	SPF motor	SPF motor phase control	SPF section
SPMT_3	SPF motor	SPF motor phase control	SPF section
SPPD	SPPD sensor	SPF transport detection	SPF section
STROBE	LED driver control		Operation section
/SYNC	Laser	Horizontal sync signal from the LSU	LSU
/TC	HV TC signal	Transfer charger grid control	Process section
TCS	Toner sensor	Toner quantity detection	Developing section
TMA_O	Toner motor	Toner motor phase control	Toner motor drive section
TMB_O	Toner motor	Toner motor phase control	Toner motor drive section
USB +D	USB signal		USB section
USB -D	USB signal		USB section
VCL	Copy lamp	Copy lamp control	Scanner unit section
/VFCNT	Fan speed signal	Fan rotation speed control	Optical section
VFMOUT	Fusing fan	Fan drive signal	Optical section
/VIDEO	Laser	Laser drive signal	LSU
(VSAMP)	AFE	AFE control signal	Scanner unit section

[15] CIRCUIT DIAGRAM

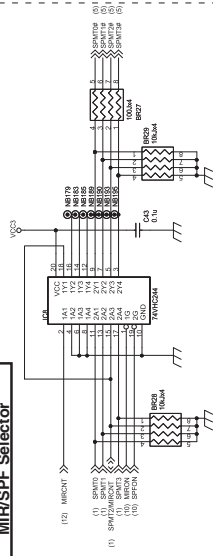
1. MCU PWB



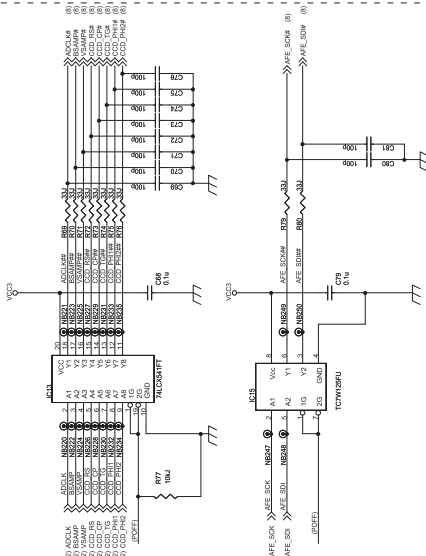
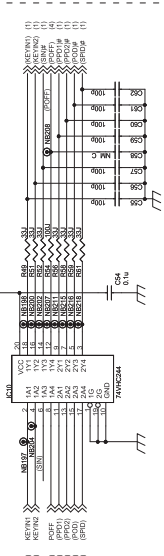


# Buffer section

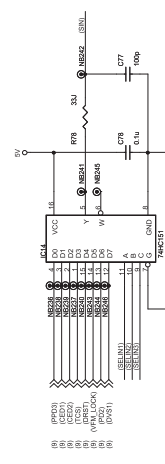
## MIR/SPF Selector



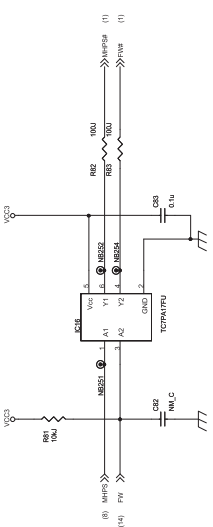
## 5V--3V level conversion/3V series Buffer



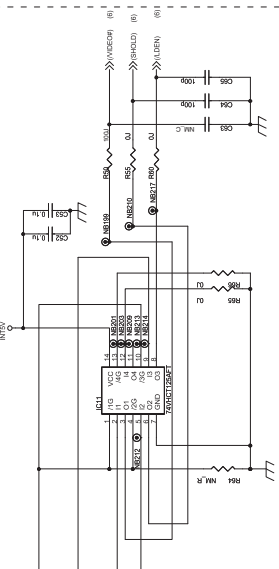
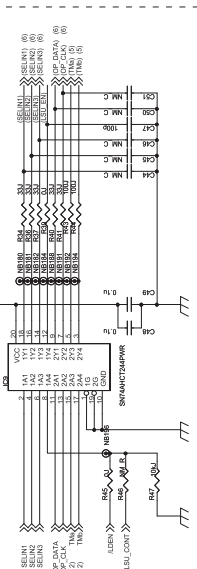
## MUX



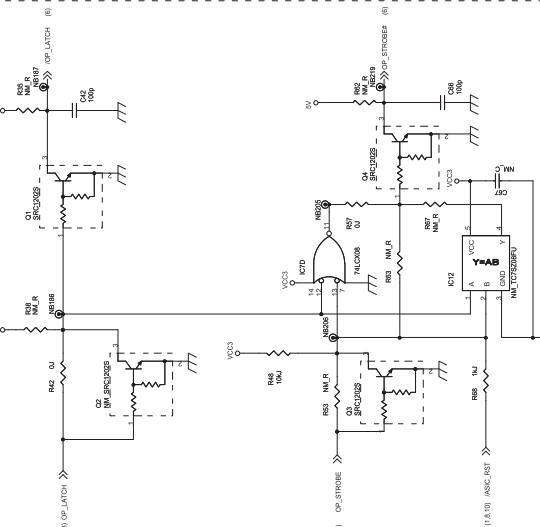
## Schmitt Buffer



## 3V--5V level conversion



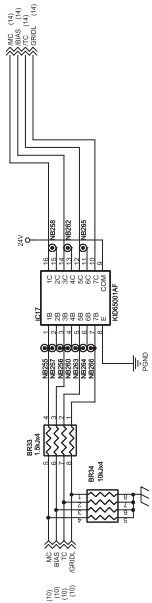
## OPF I/F circuit



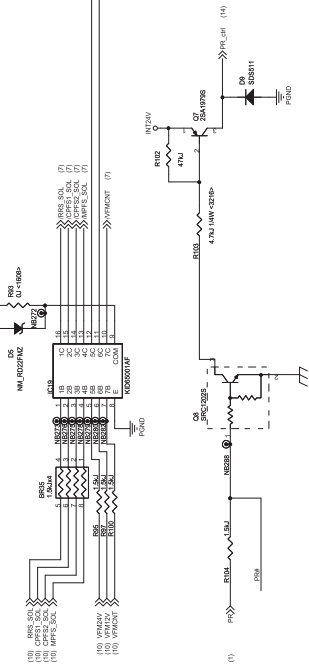
# Driver section 1

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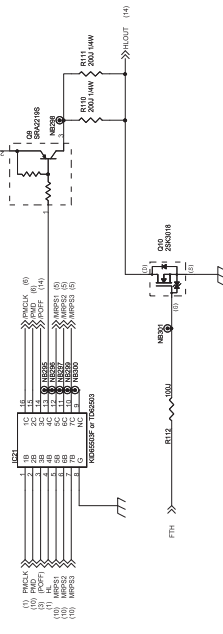
## O.C.output (HV control)



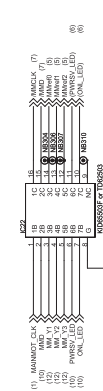
## O.C.output (Solenoid, VFM, PR)



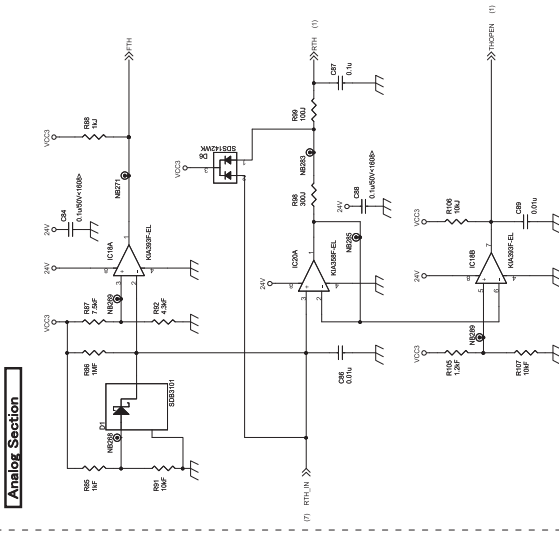
## O.C.output (Polygon, SPF Motor, Heater control)



## 3.3V/5V series O.C.output (Main, Mirror)

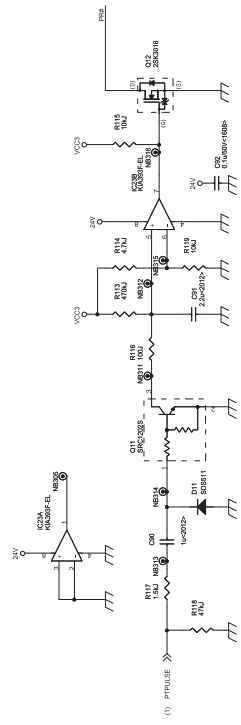


## Analogue Section



## PowerRelay-WatchDogTimer

### O.D.output (PR-WDT)

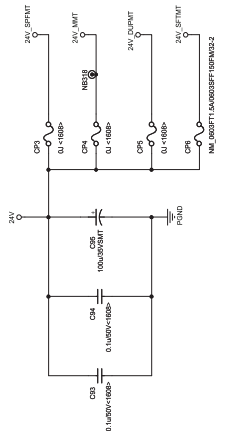




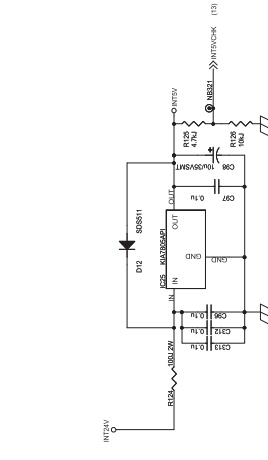
## Driver section 2

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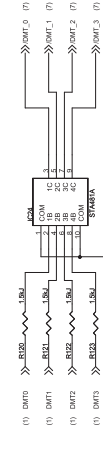
**Motor Power Source**



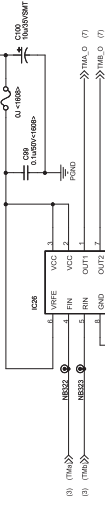
**InterLock 5V**



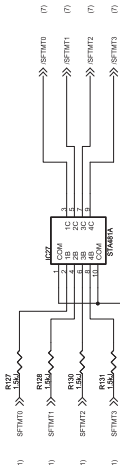
**Duplex Motor Driver**



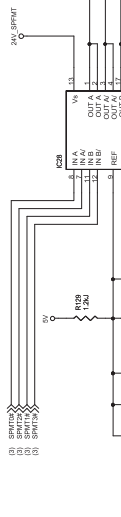
**Toner Motor Driver**



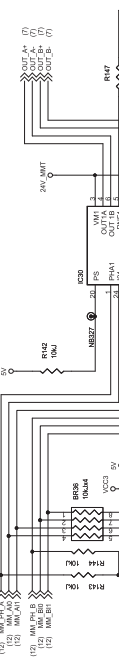
**Shifter Motor Driver**



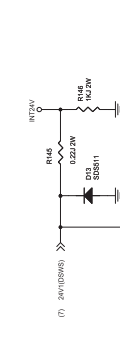
**SPF Motor Driver**



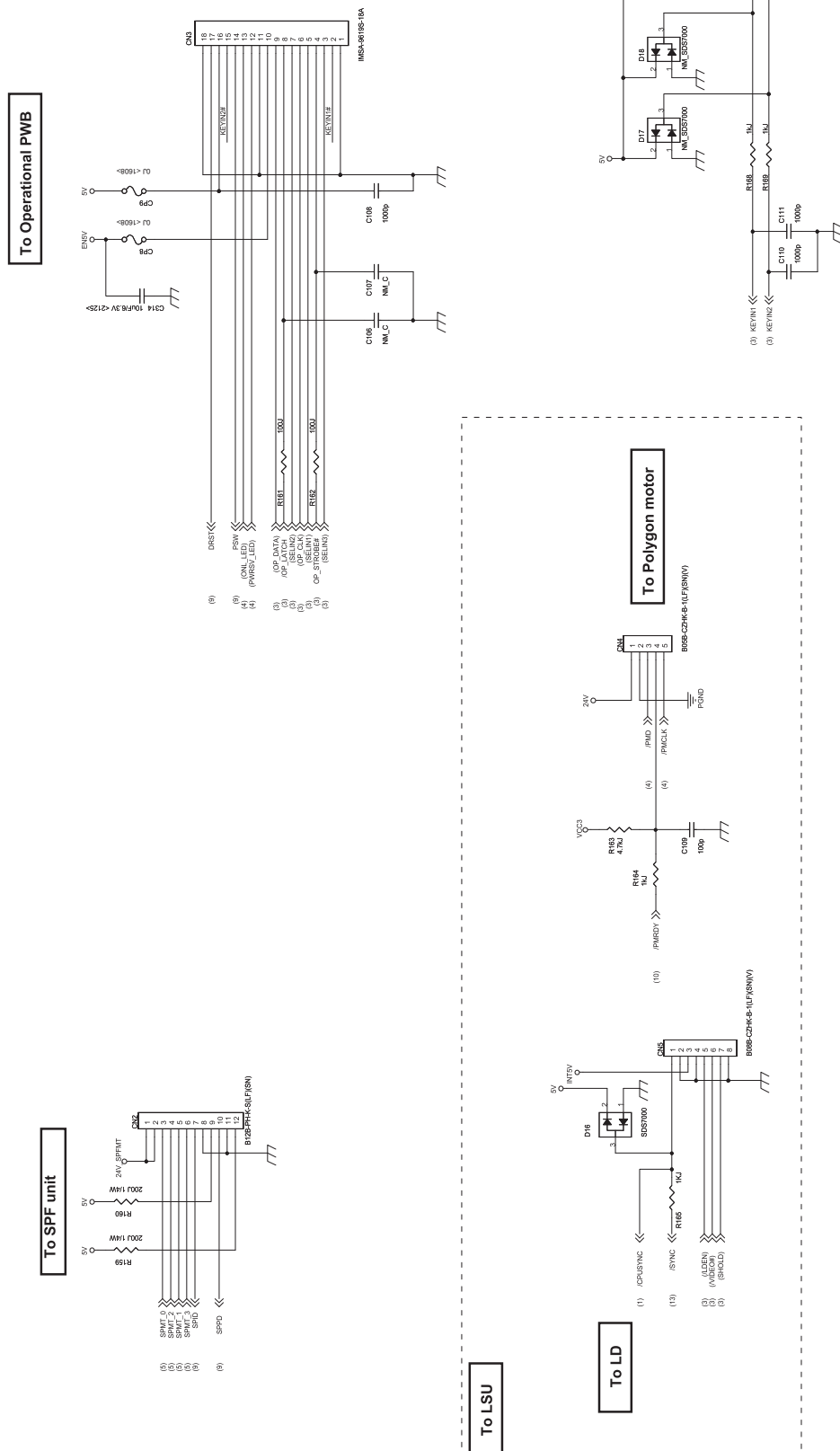
**Mirror Motor Driver**



**InterLock Power Source**



## Connector section 1

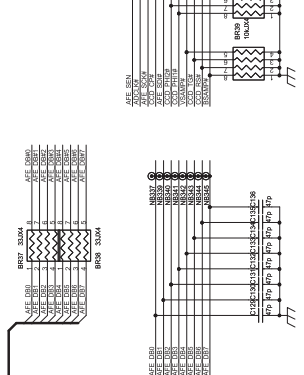
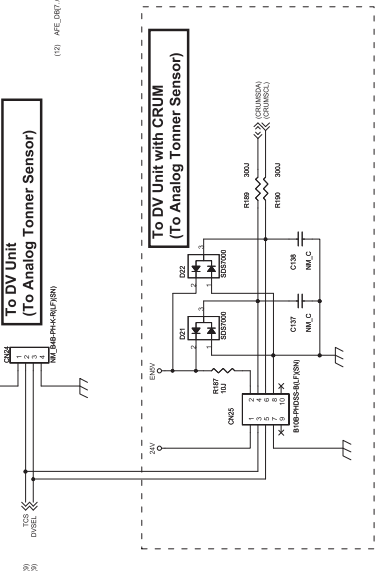
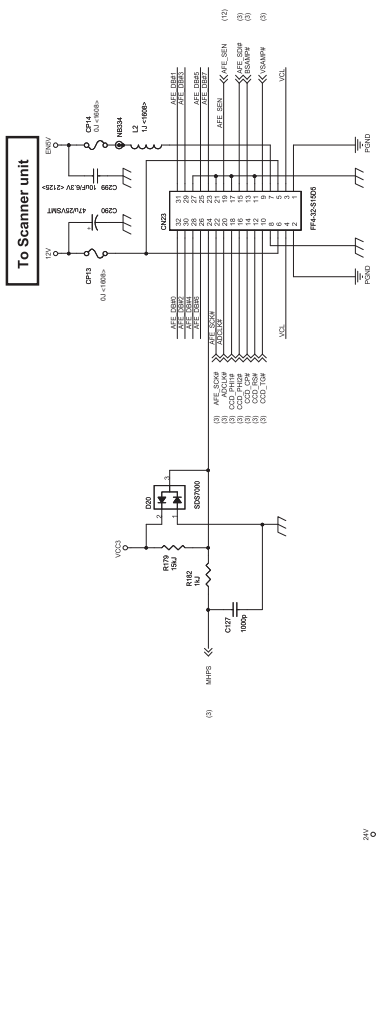
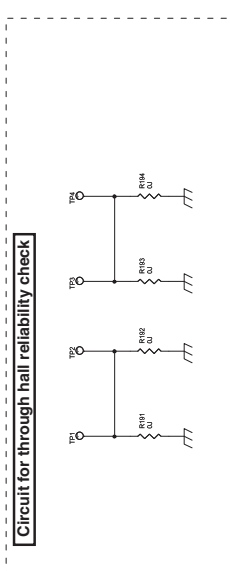
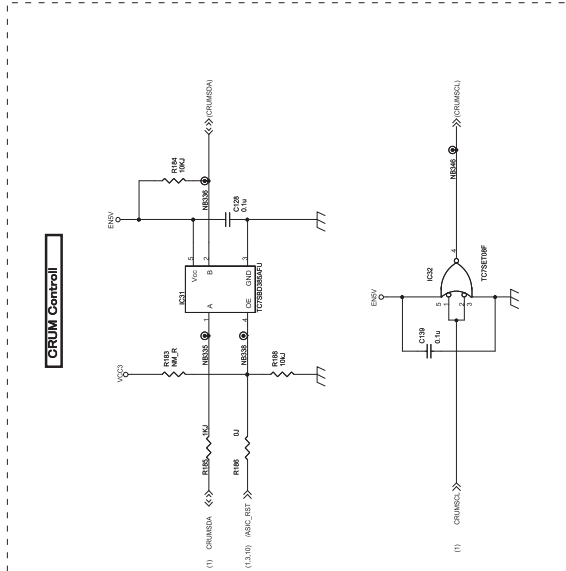
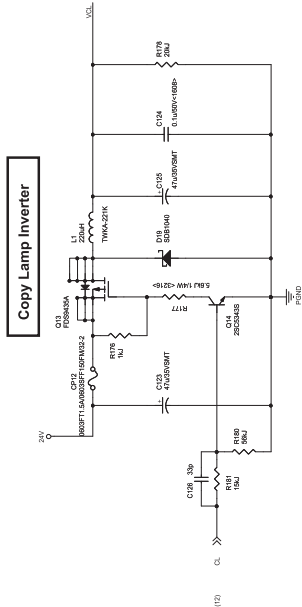


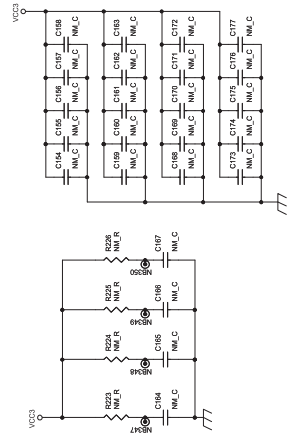
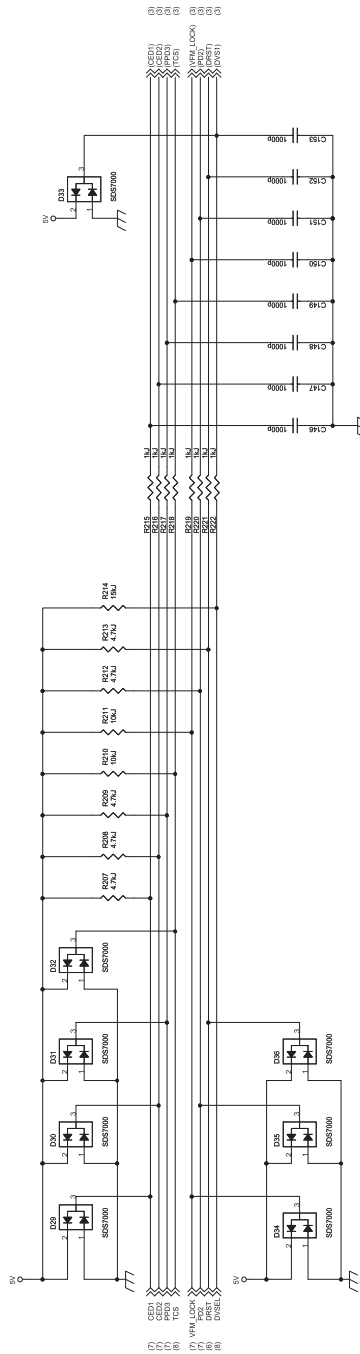
## 7/14



# Connector section 3

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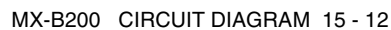








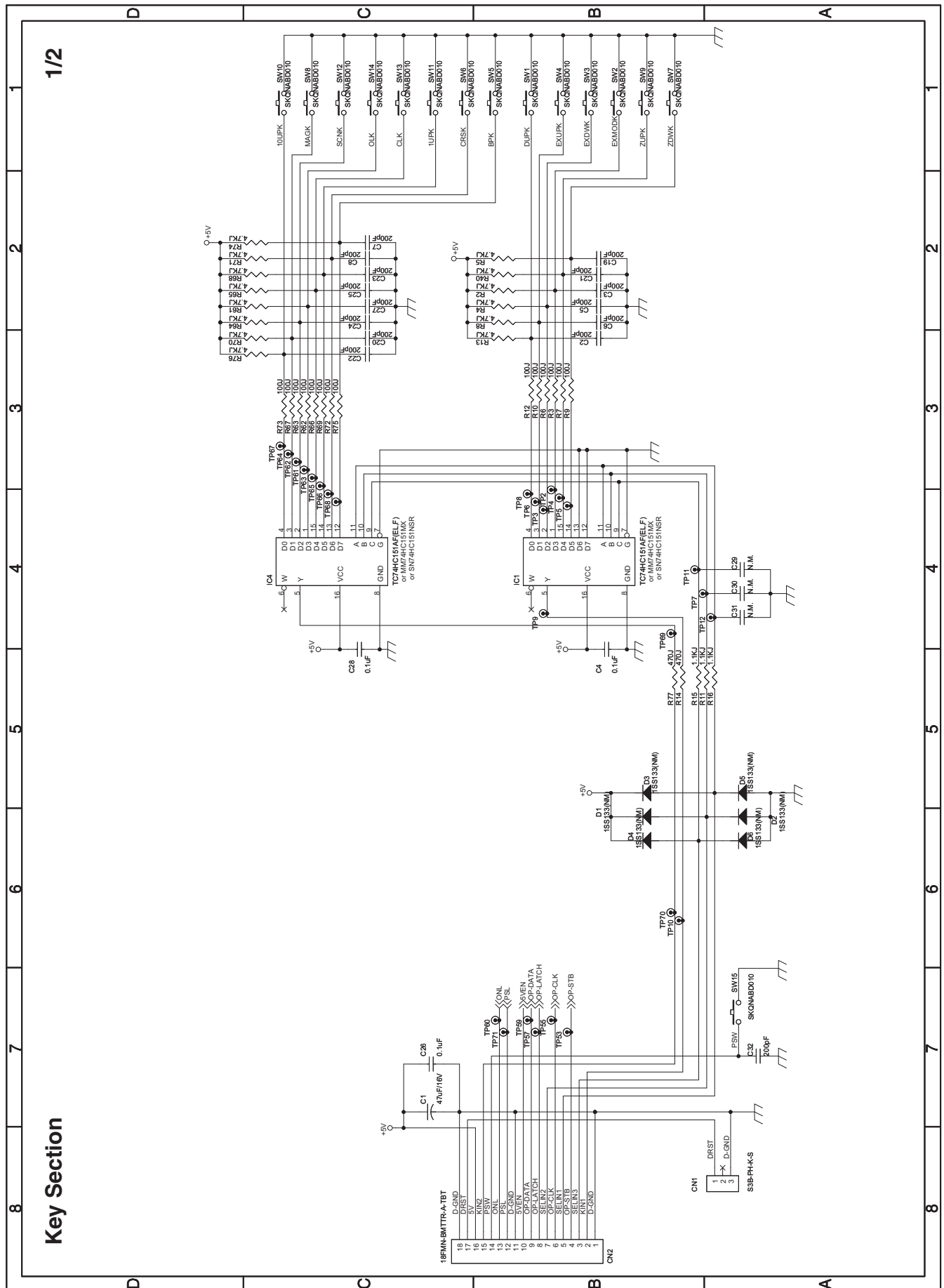






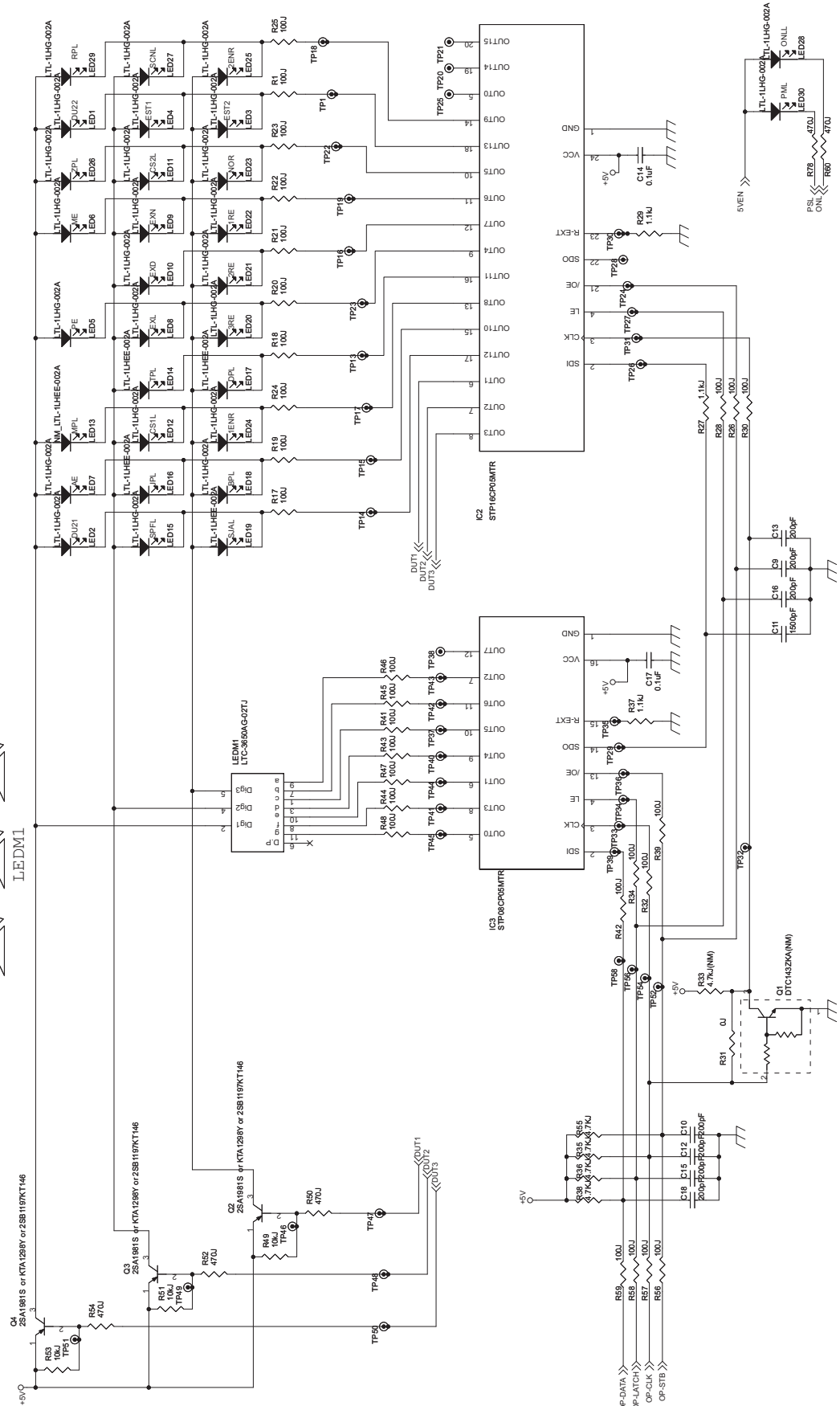
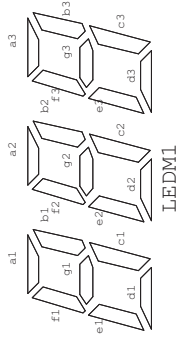


## 2. OPE PWB



# LED Section

2/2



# [16] FLASH ROM VERSION UP PROCEDURE

## 1.Preparation

Write the download data (the file with the extension dwl) to the main body.

### Necessary files for download

- Maintenance.exe (Maintenance software)
- ProcModelH\_AJ.mdl
- ProcModelH\_AJ.ini
- ProcModelH\_AJ.fmt
- Mainte.inf
- Usbscan.sys
- Download file:\*\*\*.dwl

<Note>

- The Download file(\*\*\*.dwl ) and the like that are to be downloaded should be copied, in advance, into folders that have a maintenance program.
- When creating a folder for a maintenance tool in the PC, be sure that no lengthy folder name is included in the path.

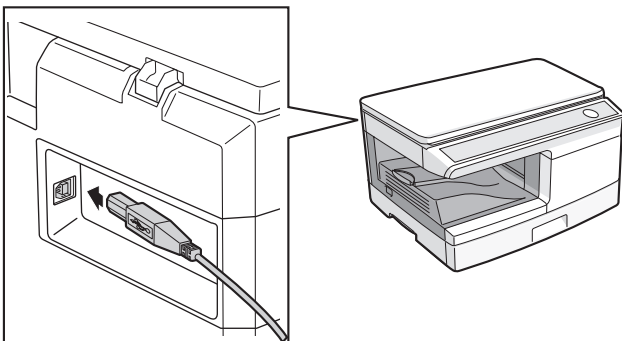
(Example)

Incorrect c:\Maintenance Download Tool

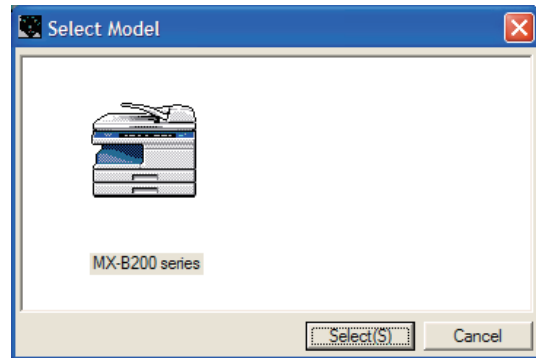
Correct c:\Maintenance\Downtool

## 2.Download procedure

- 1) Main body side:  
Executable by performing the Service Simulation No. 49-01 (Flash Rom program-writing mode).  
(A word "d" appears on the operation panel to denote the download mode status. )
- 2) Connect the PC and the main body with the download cable (USB cable).

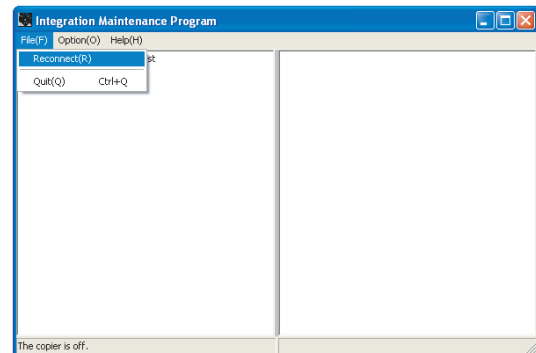


- 3) PC side:  
Boot the maintenance program. Select the model icon.

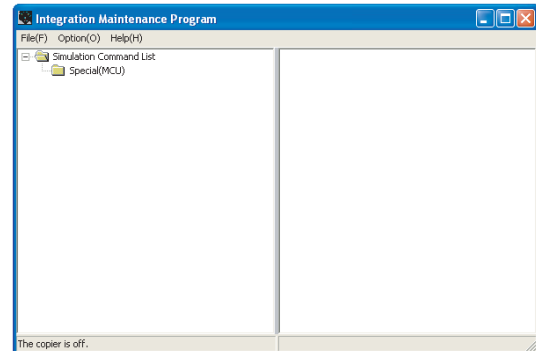


<Sample display>

- 4) PC side:  
Confirm that the "Simulation Command List" tree is displayed on the maintenance program.
- 5) PC side:  
When the message "the main body has not got started running" is displayed on the lowest area of the figure below after the "maintenance program" is started up, select the "File" and then "Reconnect" in the menu bar.

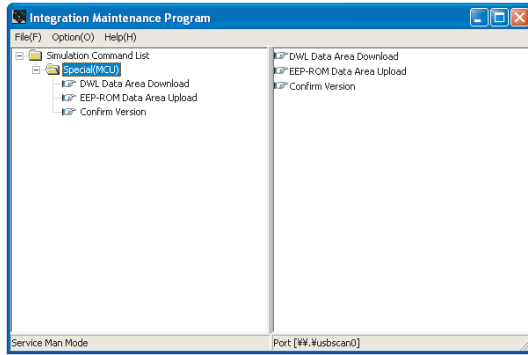


- 6) PC side:  
Confirm a tree is displayed under the "Special (MCU)" on the maintenance program". (If no tree is displayed, confirm that the USB is connected and select the "Reconnect" (the above 5) again.)



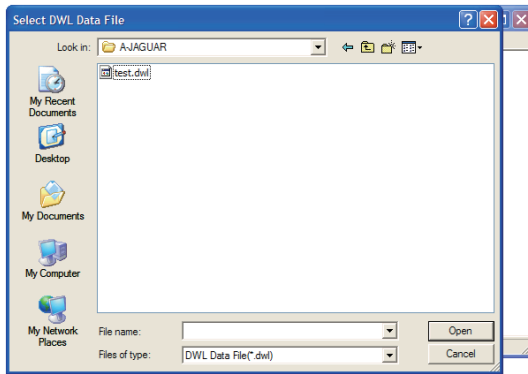
7) PC side:

Double click "Special (MCU)" in the main tree item to develop the sub tree items, and double click "DWL Download" in the sub tree items.



8) PC side:

Specify the download file (\*.dwl).

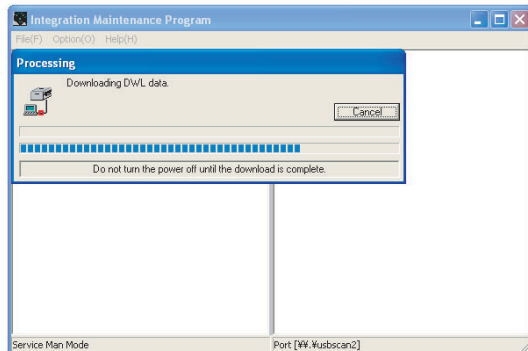


9) PC side:

The download file is specified, download is automatically performed. The AUTO PAPER SELECT indicator and START indicator will blink approximately 15 seconds after the download file is specified.

10) PC side:

When the message below is displayed, download is completed. Completion message: DOWNLOAD COMPLETED



NOTE (Important):

•Be sure that the power is not turned off and the USB cable is not removed until the word "OFF" appears.

11) Main body side:

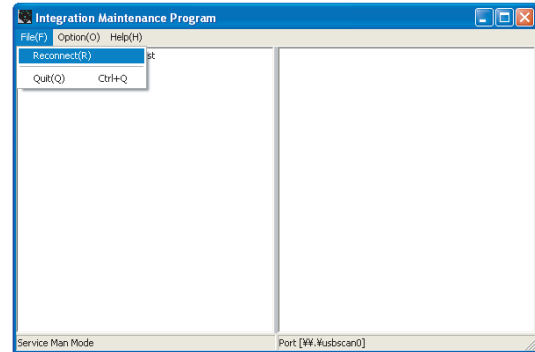
Wait until the word "OFF" appears on the operation panel.  
The appearance of "OFF" indicates the completion of the download (writing into ROM).  
Turn the power off.

12) After-process: Terminate the maintenance program, and turn on the power of the main body.

After the download (data transmission) has been completed, exit the software program. The USB cable can be removed at this point.

NOTE:

•For making a second connection with another machine, select the "File" and "Reconnect" in the menu bar on the maintenance program at the time of the USB being re-connected. Repeat the previous procedures from the above 5).



**\* Forbidden actions while downloading (Important)**

Failure in the download concerned may not allow you to conduct the subsequent download procedures. Added care should be taken to avoid having the situation below arise while downloading.

- Switching off the main body.
- Disconnecting the download cable (USB cable).

**\* If the above inhibit item occurs during downloading:**

Turn OFF and ON the power.

- 1) If "d" (which means downloading) is displayed on the operation panel LED of the machine, perform downloading again.
- 2) If "d" (which means downloading) is not displayed on the operation panel LED of the machine, turn OFF the power, and press and hold the and turn ON the power. If, then, "d" (which means downloading) is displayed on the operation panel LED of the machine, perform downloading again.  
If "d" is still not displayed, the MCU must be replaced.

## 3. Installation procedure

### A. USB joint maintenance program installation

The driver is installed by plug and play.

### B. Installation procedure on Windows XP

1) Machine side:

Executable by performing the Service Simulation No. 49-01 (Flash Rom program-writing mode).  
(A word "d" appears on the operation panel to denote the download mode status. )

2) Connect the machine and the PC with a USB cable.



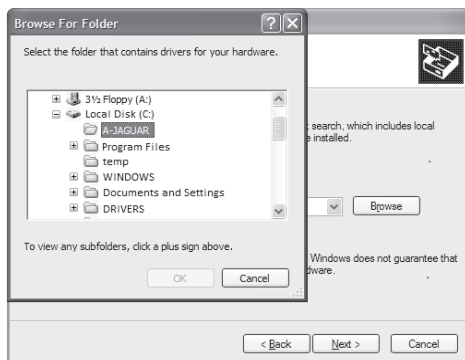
- 3) Check that the following display is shown.  
Select "Install from a list or the specific location" and press the NEXT button.



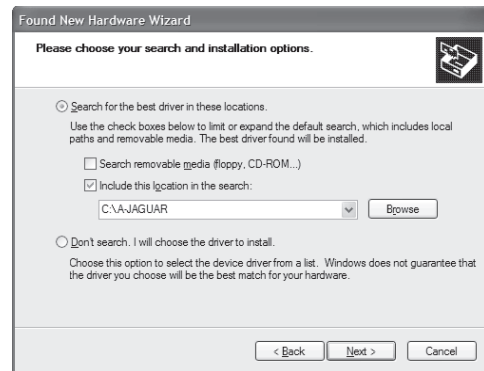
- 4) Select "Include this location in the search". If the retrieval area does not include the folder which includes the maintenance tool driver (Mainte.inf), select "Browse"  
If the folder path is properly shown, press the NEXT button to go to procedure 7).



- 5) Select the folder which includes the maintenance tool driver (Mainte.inf), and press the OK button.  
(When the driver is included in the "C:\\" folder:)



- 6) Check that the path to the folder which includes the maintenance tool driver (Mainte.inf) is shown, and press the NEXT button.



- 7) Check that the following display is shown. Press the Continue Anyway button.



- 8) When installation is completed, the following display is shown.  
Press the Finish button.



The installation procedure (on Windows XP) is completed with the above operation.

## C. Installation procedure on Windows 2000

- Machine side:  
Executable by performing the Service Simulation No. 49-01 (Flash Rom program-writing mode).  
(A word "d" appears on the operation panel to denote the download mode status. )
- Connect the machine and the PC with a USB cable.

- 3) Check that the new hardware search wizard is shown. Press the NEXT button.



- 4) Select "Search for a suitable driver for my device" and press the NEXT button.



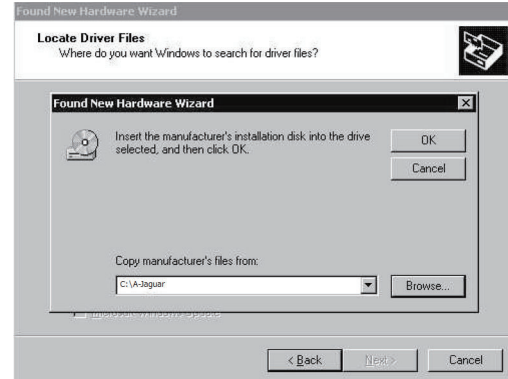
- 5) Select "Specify a location" and press the NEXT button.



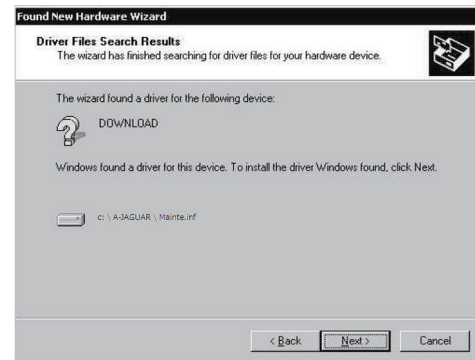
- 6) Press the "Browse" button. Specify the folder which includes the maintenance tool driver (Mainte.inf)



- 7) Specify the folder which includes the maintenance tool driver (Mainte.inf), and press the OPEN button. Check that the path to the folder which includes the maintenance tool driver (Mainte.inf) is properly displayed, and press the OK button. (When the maintenance tool driver is included in the folder of "D:\")



- 8) Press the NEXT button, and installation is started.



- 9) When installation is completed, the following display is shown. Press the Finish button.

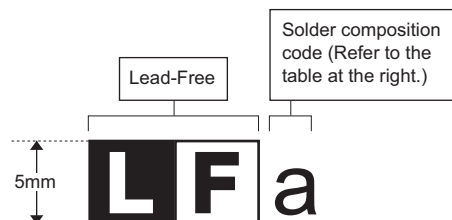


The installation procedure of the joint maintenance program on Windows 2000 is completed with the above operation.

## LEAD-FREE SOLDER

The PWB's of this model employs lead-free solder. The "LF" marks indicated on the PWB's and the Service Manual mean "Lead-Free" solder. The alphabet following the LF mark shows the kind of lead-free solder.

### Example:



<Solder composition code of lead-free solder>

Solder composition	Solder composition code
Sn-Ag-Cu	a
Sn-Ag-Bi Sn-Ag-Bi-Cu	b
Sn-Zn-Bi	z
Sn-In-Ag-Bi	i
Sn-Cu-Ni	n
Sn-Ag-Sb	s
Bi-Sn-Ag-P Bi-Sn-Ag	p

### (1) NOTE FOR THE USE OF LEAD-FREE SOLDER THREAD

When repairing a lead-free solder PWB, use lead-free solder thread.

Never use conventional lead solder thread, which may cause a breakdown or an accident.

Since the melting-point of lead-free solder thread is about 40°C higher than that of conventional lead solder thread, the use of the exclusive-use soldering iron is recommended.

### (2) NOTE FOR SOLDERING WORK

Since the melting-point of lead-free solder is about 220°C, which is about 40°C higher than that of conventional lead solder, and its soldering capacity is inferior to conventional one, it is apt to keep the soldering iron in contact with the PWB for longer time. This may cause land separation or may exceed the heat-resistive temperature of components. Use enough care to separate the soldering iron from the PWB when completion of soldering is confirmed.

Since lead-free solder includes a greater quantity of tin, the iron tip may corrode easily. Turn ON/OFF the soldering iron power frequently.

If different-kind solder remains on the soldering iron tip, it is melted together with lead-free solder. To avoid this, clean the soldering iron tip after completion of soldering work.

If the soldering iron tip is discolored black during soldering work, clean and file the tip with steel wool or a fine filer.

#### CAUTION FOR BATTERY REPLACEMENT

(Danish)

ADVARSEL !

Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.  
Udskiftning må kun ske med batteri  
af samme fabrikat og type.

Levér det brugte batteri tilbage til leverandoren.

(English)

Caution !

Danger of explosion if battery is incorrectly replaced.  
Replace only with the same or equivalent type  
recommended by the manufacturer.

Dispose of used batteries according to manufacturer's instructions.

(Finnish)

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.  
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan  
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden  
mukaisesti.

(French)

ATTENTION

Il y a danger d'explosion s' il y a remplacement incorrect  
de la batterie. Remplacer uniquement avec une batterie du  
même type ou d'un type équivalent recommandé par  
le constructeur.

Mettre au rebut les batteries usagées conformément aux  
instructions du fabricant.

(Swedish)

VARNING

Explosionsfara vid felaktigt batteribyte.  
Använd samma batterityp eller en ekvivalent  
typ som rekommenderas av apparattillverkaren.  
Kassera använt batteri enligt fabrikantens  
instruktion.

(German)

Achtung

Explosionsgefahr bei Verwendung inkorrektter Batterien.  
Als Ersatzbatterien dürfen nur Batterien vom gleichen Typ oder  
vom Hersteller empfohlene Batterien verwendet werden.  
Entsorgung der gebrauchten Batterien nur nach den vom  
Hersteller angegebenen Anweisungen.

#### CAUTION FOR BATTERY DISPOSAL

(For USA, CANADA)

"BATTERY DISPOSAL"

THIS PRODUCT CONTAINS A LITHIUM PRIMARY  
(MANGANESE DIOXIDE) MEMORY BACK-UP BATTERY  
THAT MUST BE DISPOSED OF PROPERLY. REMOVE THE  
BATTERY FROM THE PRODUCT AND CONTACT YOUR  
LOCAL ENVIRONMENTAL AGENCIES FOR INFORMATION  
ON RECYCLING AND DISPOSAL OPTIONS.

"TRAITEMENT DES PILES USAGÉES"

CE PRODUIT CONTIENT UNE PILE DE SAUVEGARDE DE  
MÉMOIRE LITHIUM PRIMAIRE (DIOXYDE DE MANGANÈSE)  
QUI DOIT ÊTRE TRAITÉE CORRECTEMENT. ENLEVEZ LA  
PILE DU PRODUIT ET PRENEZ CONTACT AVEC VOTRE  
AGENCE ENVIRONNEMENTALE LOCALE POUR DES  
INFORMATIONS SUR LES MÉTHODES DE RECYCLAGE ET  
DE TRAITEMENT.



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